

## **ATTACHMENT-12**



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## **BEST MANAGEMENT PRACTICES PLAN**

**Barnhardt Manufacturing Company  
247 Main Road  
Colrain, MA 01340**

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Project: 3958

May 2020

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## ATTACHMENTS

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# **BEST MANAGEMENT PRACTICE PLAN**

**Barnhardt Manufacturing Company  
247 Main Road  
Colrain, MA 01340**

## **1.0 INTRODUCTION**

As outlined in the United States Environmental Protection Agency's (EPA) Guidance Manual for Developing Best Management Practices (BMPs), BMPs are recognized as an important part of the National Pollutant Discharge Elimination System (NPDES) permitting process to prevent the release of toxic and hazardous chemicals. Over the years, as BMPs for many different types of facilities have been developed, studies have demonstrated not only the success but the flexibility of the BMP approach in controlling releases of pollutants to receiving waters. Pollution prevention methods have been shown to reduce costs as well as pollution risks through source reduction, good housekeeping, and recycling/reuse techniques.

The Federal Water Pollution Control Act of 1972 established the objectives of restoring and maintaining the chemical, physical, and biological integrity of the Nation's waters. These objectives remained unchanged in the 1977, 1982, and 1987 amendments, commonly referred to as the Clean Water Act (CWA). As part of the CWA strategy to eliminate discharges of pollutants to receiving waters, NPDES Permit limitations have become more stringent. As such, industrial and municipal facilities subject to the NPDES program may need to undertake additional measures to meet these Permit limitations, as well as the goals of the CWA. Such measures can be technologically and economically achievable through the development of formalized plans that contain BMPs and pollution prevention practices.

## **1.1 PROPERTY DESCRIPTION**

The Barnhardt Manufacturing Company (BMC) is located at 247 Main Road in Colrain, Massachusetts (the Facility). The Facility is owned by BMC, 1100 Hawthorne Lane, Charlotte, NC 28205. The Facility is a cotton bleachery with an associated steam generating plant and Wastewater Treatment Plant (WWTP), which handles municipal waste from 21 surrounding residences, the Facility itself and process water from the bleachery.

The Facility withdraws water from the North River, which is used in the manufacturing process and treated through the on-site WWTP. The WWTP returns the treated water back to the North River under the Facility's National Pollutant Discharge Elimination System (NPDES) Permit No. MA0003697 (the "Permit"), dated March 1, 2018.

The Facility operates under the EPA Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity (effective May 27, 2009) for Industrial Activities, Sector V – Textiles Mill, Apparel, and Other Fabric Products. A renewed MSGP Permit became effective June 4, 2015. The MSGP also requires the preparation of a Stormwater Pollution Prevention Plan (SWPPP), which was last revised in September 2019.

As a result of effluent discharge from the WWTP to surface waters, the EPA issued NPDES Permit Modification No. MA0003697 (Permit) on March 1, 2018. This Permit allows BMC to continue to discharge process water treated at the on-site WWTP to the North River.

Under the March 2018 Modified NPDES Permit, the Facility is required to develop a plan which establishes BMPs that are to be followed as part of the Facility's operation, the cleaning of any equipment, and disposing of any liquid and solid waste. The purpose of the BMP Plan is to identify and describe the practices which minimize the amount of pollutants (biological and chemical) discharged to surface waters. Therefore, this BMP has been prepared in support of the March 2018 Modified NPDES Permit and the MSGP.

## **1.2 FACILITY LOCATION**

As previously discussed, the Facility is located at 247 Main Road in Colrain, Massachusetts. The latitude and longitude for the Facility are approximately 42°39'20" north and 71°42' 55" west, respectively. The Universal Transverse Mercator (UTM) coordinates are Zone 18T, 687254 mE and 4725104 mN. The elevation of the Facility is approximate 500 feet above mean sea level.

The Facility property is currently owned by BMC, which is headquartered in Charlotte, North Carolina. [Figure 1](#) is a Locus Map and shows the approximate location of the Facility on a U.S. Geological Survey Map. [Figure 2](#) is an aerial view of the Facility. [Figure 3A](#) and [Figure 3B](#) – Facility Plan depict the BMC property, the locations of Facility buildings, aeration basin, and other relevant Facility features. [Figure 4](#) through [Figure 9](#) present relevant Facility features.

As defined by the Massachusetts contingency Plan (MCP; 310 CMR 40.0000), the Facility is in an area defined as the Zone II of a Public Drinking Water Supply Well, which is “that area of an aquifer which contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated ...”

## **1.2 STATEMENT OF BMP POLICY AND OBJECTIVES**

The objective of this BMP is to describe BMC work practices that are aimed at reducing the amount of pollutants (biological and chemical) discharged from the Facility to the surface waters of the North River. These Facility BMPs include daily operation and maintenance practices utilized throughout the Facility, including the cleaning of any equipment, disposal of liquid and solid waste, and the operation of the Facilities WWTP in support of the NPDES Stormwater MSGP. This Facility BMP Plan identifies and describes the specific BMPs to be employed at the plant, in a manner consistent with the specifications of the NPDES Permit Modification No. MA0003697.

### **1.2.1 BMP REQUIREMENTS**

The Facility shall implement and maintain a BMP Plan that is designed to reduce or prevent the discharge of process water pollutants to waters of the United States and identifies/describes the BMPs employed by the Facility in operating process water controls, in a manner consistent with the terms of the NPDES Permit.

A copy of the BMP Plan, including any BMP Amendment(s) and annual reviews, and certifications shall be maintained at the Facility and made available to EPA and/or MassDEP upon request.

In accordance with the BMC Colrain Facility NPDES Permit, the minimum documentation requirements under this BMP Plan are as follows:

- Records of operational and preventive maintenance activities, equipment inspections, procedure audits, and personnel training for the Facility; and
- Records of the collection and analysis of NPDES/BMP-related samples from the Facility, including, but not limited to, sample location, any calculations done at the time of sampling, any sampling or analytical methods used for samples analyzed at the Facility, and sample results.

All documentation of BMP Plan activities shall be kept at the Facility and provided to EPA or MassDEP upon request.

The following [Table 1](#) provides a cross reference between the BMP requirements listed under the March 2018 Facility NPDES Permit and the salient BMP Plan section(s).

**Table 1 – NPDES PERMIT AND BMP PLAN CROSS REFERENCE TABLE**

<b>NPDES BMP REQUIREMENT</b>		<b>BMP SECTION(S)</b>
Selection, design, installation, implementation and maintenance of control measures necessary to meet the effluent limitations in the NPDES Permit		Section 4.0
A description of the Facility pollution control equipment and procedures used to minimize the discharge of suspended solids, floating solids, foam/scum/debris, visible oil sheen, and settleable solids to surface waters		Section 4.0 Section 5.0 Section 6.0
Preventative maintenance procedures for the pollution control equipment at the Facility		Section 8.0
Procedures for handling Facility wastes, a description of where solids removed from the pollution control equipment or appurtenances, and the control measures used to prevent the removed solids from reentering the receiving water. If Facility wastes are removed from the site, describe the destination and the method of disposal and/or reuse.		Section 9.0
A record of the following information for all chemicals and additives used at the Facility in the treatment processes (flocculation, clarification, filtration, and disinfection), and for control of biological growth, and corrosion and scale in water pipes:		Appendix C
	Product name, chemical formula, and manufacturer of the additive	Appendix C Appendix D
	Purpose or use of the additive	Section 4.0 Section 5.0 Section 6.0
	Safety Data Sheet (SDS) and Chemical Abstracts Service (CAS) Registry number for each additive	Appendix D

NPDES BMP REQUIREMENT		BMP SECTION(S)
	The frequency (e.g., hourly, daily), duration (e.g., hours, days), quantity (e.g., maximum and average), and method of application for the additive	Section 4.0 Table 3
	The vendor's reported aquatic toxicity, when available [NOAEL and/or LC50 in percent for aquatic organism(s)].	Appendix D
A description of the training to be provided for employees to assure they understand the goals, objectives, and procedures of the BMP Plan, the requirements of the NPDES Permit, and their individual responsibilities for complying with the goals and objectives of the BMP Plan and the NPDES Permit.		Section 15.0



### 1.3 MANAGEMENT APPROVAL

The responsible party for management and implementation of this BMP Plan is:

**Barnhardt Manufacturing Company**

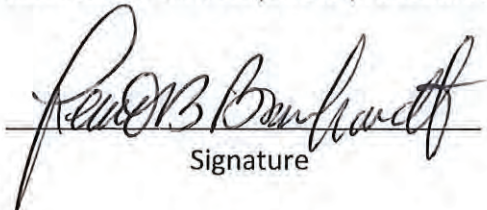
Lewis Barnhardt, President/COO

1100 Hawthorne Ln, Charlotte, NC 28205

Phone: (704) 906-9245

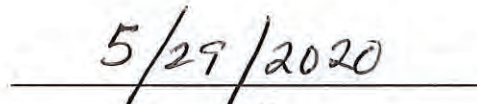
This BMP Plan has been prepared in accordance with sound engineering practices and has the full approval of BMC management at a level of authority to commit the necessary resources to fully implement this BMP Plan. This BMP Plan has been prepared to meet the requirements of the Permit and to reduce the pollutants discharged in process water to the extent practical. This management approval has been signed and certified in accordance with the requirements set forth under 40 CFR Part 122.22.

For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated Facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for Permit application requirements; and where authority to sign documents has been assigned or delegated to the Facility manager in accordance with corporate procedures.

  
Signature

  
Print Name

  
Title

  
Date



### 1.3.2 ANNUAL CERTIFICATION

In accordance with the Permit, BMC shall certify at least annually that the Facility is following the requirements of the BMP Plan. If the Facility is not in compliance with any aspect of the BMP Plan, the annual certification shall state the noncompliance (e.g., a selected BMP is not achieving the control necessary to meet a numeric or non-numeric effluent limitation) and the actions which were undertaken to remedy such noncompliance (e.g., the selection, design and implementation of an alternate BMP). This annual certification has been signed and certified in accordance with the requirements set forth under 40 CFR Part 122.22.

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Signature

---

Print Name

---

Title

---

Date

1. Is the Facility in compliance with the BMP Plan under the Annual Certification?

(Yes or No) \_\_\_\_\_

2. If the answer to question 1 is No, state the Facility non-compliance issue(s) below\*.

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3. If the answer to question 1 is No, state the action(s) undertaken at the Facility to remedy the non-compliance issue(s) below\*.

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\* - Use additional page(s) if/as necessary to complete questions 2 and 3 above.

### 1.3.3 REVISION/AMENDMENT LOG

The Facility shall amend and update the BMP Plan **within 30 days** for any Facility changes affecting this BMP Plan.

Such changes may include, but are not limited to, changes in the design, construction, operation, or maintenance of the Facility, which have a significant effect on the potential for the discharge of pollutants to the waters of the United States. The amended BMP Plan shall be documented under Section 1.3.3 of this plan and certified as described above.

Rev. No.	Amend. No.	Date	Page(s)	Certified (Y or N)	Reason for Change

## 2.0 BMP COMMITTEE

The BMP committee is developed to assist the Facility in managing all aspects of the BMP plan and is responsible for developing the BMP plan and assisting the Facility management in its implementation, periodic evaluation, and updating. The committee functions to conduct activities and shoulder the responsibilities of all elements discussed herein.

As shown in [Table 2](#), the BMP Committee is comprised of four internal members (Director of Operations, Environmental Health and Safety Manager, Wastewater Treatment Plant Operator and Maintenance Manager) and three external members (Facility Process and Treatment Consultant, Environmental Consultant and Emergency Response Contractor).

**Table 2 – BMP COMMITTEE PROJECT TEAM**

Title	Name	Contact Information
DIRECTOR OF OPERATIONS	Tom Robinson	Phone: (704) 376-0380 <a href="mailto:tom.robinson@barnhardt.net">tom.robinson@barnhardt.net</a>
ENVIRONMENTAL, HEALTH AND SAFETY MANAGER	Timothy Mosher	Phone: 413-624-3471 x3701 <a href="mailto:tim.mosher@barnhardt.net">tim.mosher@barnhardt.net</a>
WASTEWATER TREATMENT PLANT OPERATOR	Keith Gammell	Phone: 413-624-3471 x3722 412-625-2381 – Off Hours <a href="mailto:keith.gammell@barnhardt.net">keith.gammell@barnhardt.net</a>
MAINTENANCE MANAGER	Mark Thibodeau	Phone: 413-624-3471 x3720 – 413-624-3232 – Off Hours <a href="mailto:mark.thibodeau@barnhardt.net">mark.thibodeau@barnhardt.net</a>
FACILITY PROCESS AND TREATMENT CONSULTANT	Applied Technology and Engineering, P.C.	Phone: 434-249-6443 <a href="mailto:wgoneal@atandepc.com">wgoneal@atandepc.com</a>
ENVIRONMENTAL CONSULTANT – LICENSED SITE PROFESSIONAL	Omni Environmental Group	978-256-6766 x 102 <a href="mailto:gmorand@omnieg.com">gmorand@omnieg.com</a>

Title	Name	Contact Information
EMERGENCY RESPONSE CONTRACTOR	Western Mass Environmental	413-788-2622 – 24 Hr.

### **Director of Operations**

The Director of Operations has overall responsibility for the implementation of the BMP and is responsible for:

- Overall operations of the Facility in accordance with this BMP, including inspections, proper housekeeping, and general maintenance; and
- Overall supervision during any emergency response event.

### **Environmental Health and Safety Manager**

The Environmental Health and Safety Manager is responsible for:

- Preparation of the BMPs, including their periodic evaluation and updating as necessary;
- Ensuring periodic inspections of activities and material storage are completed to ensure that contaminants are not exposed to storm water, which may result in storm water contamination;
- Conducting an annual Comprehensive Facility Compliance Evaluation;
- Coordinating training and storm water monitoring activities;
- Providing compliance guidance to Facility personnel during an emergency response event; and
- Direct and facilitate emergency response activities.

### **Wastewater Treatment Plant Operators**

The Chief Wastewater Treatment Plant Operator has primary responsibility for the treatment of wastewater from Facility operations and the effluent discharged through NPDES Outfall Number 001. This operator is familiar with the water treatment process at the plant including, wastewater collection systems, flow control, chemical additions, pH control, solids removal, pumping, dewatering, and filtration. The operator shall work safely with an awareness of their industrial work environment.

The operator is responsible for completing and recording analytical results according to procedure. They must operate and maintain the Facility by the review of operating information, as well as make proper decisions based on this information, the Permit, operational knowledge, and experience. The operator must understand the responsibilities and obligations of this position.

### **Facility Maintenance Managers**

Facility Maintenance Manager and other-directed personnel are primarily responsible for the overall implementation of the BMPs, Facility assessments/inspections in accordance with the BMP, provide recommendations to management in support of BMP policy, and provide the initial response to a chemical spill at the Facility.

In the event of an oil spill, the department personnel in the vicinity where the release occurred will respond in accordance with the Spill Prevention, Control, and Countermeasure (SPCC) Plan.

The Immediate Facility Supervisor has overall responsibility for responding to spills and initiating response actions. BMC provides an annual training session that discusses emergency response procedures in the event of a chemical and/or oil spill.

Spill kits of cleanup equipment for oil and/or hazardous material shall be maintained at the Facility and are designated for review of materials during monthly Site inspections by BMC personnel. These spill kits should include the following items or their equivalents in volumes appropriate for the location in which it is to be stored for use:

- Rolls, booms and pads of absorbent material;
- Granular absorbent materials;
- Neutralizing agent;
- Drain mat blockers;
- Caution tape;
- 55-gallon drum containers; and
- Shovels, brooms, boots and gloves.

BMC personnel are responsible for checking the spill kits for completeness during scheduled inspections, and shall be restocked following each use. BMC has the responsibility of maintaining an adequate supply of spill response materials. Additional items may be added to the spill kits as deemed necessary.

BMC maintains spill kits in the warehouse, receiving dock), maintenance shop, boiler building (near chemical storage), WWTP (near chemical storage), lower deck of the bleachery (near chemical storage), upper deck of the bleachery (near kiers), fuel unloading area,

#### **Treatment Plant Process and Operations Consultant**

A treatment plant process and operations consultant can be contacted to advise the Facility personnel on issues related to treatment process and operations. In addition, such a consultant can provide for Facility evaluations, redesigns and/or upgrades to treatment processes, toxicity reduction evaluations, treatability studies, and Permit compliance considerations.

#### **Environmental Consultant/Licensed Facility Professional**

An environmental consultant or LSP can be contacted to advise the Facility personnel on regulatory and Permit compliance considerations, environmental sampling and testing, laboratory/analytical services, notifications, reporting and cleanups of oil and/or hazardous materials (OHM) and assistance with preparation of various Facility-specific documents required under various local, state and/or federal regulations.

#### **Emergency Response Contractors**

An emergency response contractor can be contacted to respond to Facility specific environmental emergencies, such as chemical or fuel spills and leaks that are beyond the response capabilities of Facility personnel. Emergency response contractor(s) may also aide BMC in the management of waste, if/as necessary.

### **3.0 RISK/RELEASE IDENTIFICATION AND ASSESSMENT**

Release and/or risk identification is the systematic cataloging of areas at a Facility with ongoing or potential releases to the environment. A release assessment is used to determine the impacts on human health and the environment of any on-going or potential releases identified. The identification and assessment process involve the evaluation of both current discharges and potential discharges.

The following Section discusses the locations and areas within the Facility subject to the BMP, including areas and processes that have potential for discharges to the receiving waters of the North River.

- Discharge of Treated Process Water;

- Chemical and/or Petroleum Storage;
  - Bleachery Building (No. 134);
  - Filter (No. 116) and Boiler House (No. 117) and Bulk Fuel Storage Areas;
  - Maintenance Shop and Raw Cotton Handling Area (No. 118);
  - WWTP Buildings (No. 133 and others),
  - Screen Building (No. 132);
- Areas of Material Transfer (i.e. loading docks);
- Sludge Storage;
- Parking Areas;
- Surface Drainage and Runoff; and
- Construction Activities (when applicable).

The areas subject to the BMP are identified on the [Figure 4](#) through [Figure 9](#).

### **3.1 DISCHARGE OF TREATED PROCESS WATER**

As previously discussed, BMC operates a cotton bleaching plant located at 247 Main Road, Colrain, MA, 01240. Wastewaters discharged from the Facility and from the Village of Griswoldville are treated at BMC's WWTP using extended aeration biological treatment. The WWTP operates in accordance with the NPDES Permit No. MA003697 and discharges to the North River. A flow schematic of the WWTP is provided in [Appendix A](#).

The reissued Permit, dated March 1, 2018, required that an evaluation be performed of the alternative methods of operating the existing WWTP to optimize the removal of nitrogen, and to submit a report to EPA and MassDEP documenting the evaluation. On February 28, 2019 the Treatment Plant Optimization for Nitrogen Evaluation report was submitted to the EPA's Office of Ecosystem Protection in Boston, MA.

As required by NPDES Permit No. MA0003697 Part 1.B.2, a three-year compliance schedule for phosphorus, copper and toxicity was provided to detail progress towards meeting the final Permit limits. Compliance with these parameters is required by February 28, 2021. In January 2020, the Annual Nitrogen Report and Annual Compliance Report was submitted to EPA's Office of Ecosystem Protection in Boston, MA. Please refer to [Appendix B](#) for a copy of the Treatment Plant Optimization for Nitrogen Evaluation and Annual Nitrogen/Compliance Reports.

The WWTP was designed for a capacity of 1.3 million gallons per day (mgd). Wastewater from the Facility, including bleaching, sanitary and other wastewaters, and wastewater from the Village of Griswoldville are combined and pumped through screens to remove fiber and other coarse solids. Screened wastewater flows to the extended aeration activated sludge plant which consists of an aeration basin and two secondary clarifiers. Each aeration basin provides a hydraulic capacity of around 1.65 million gallons and can be operated independently. Fine bubble diffusers are provided for aeration and mixing. Each clarifier has a diameter of 55 feet and can be operated in parallel or individually.

Clarifier effluent flows are combined and pass through a metering station to the discharge point. A belt filter press is used for sludge dewatering. The storage and disposal of dewatered sludge is further discussed in Section 9.0.

### **3.1.1 NITROGEN**

According to the February 28, 2019, Treatment Plant Optimization for Nitrogen Evaluation, the WWTP is operating at a high level of efficiency with respect to removal of carbonaceous materials. The existing wastewater treatment plant was designed to operate under aerobic conditions with a high hydraulic retention time (HRT) and high mean cell residence time. Under these design conditions, nitrification, the conversion of ammonia to nitrate, is occurring. It was determined that the existing wastewater treatment system is being operated efficiently and no operational changes that would significantly reduce the concentration of effluent total nitrogen were identified.

As outlined in the January 15, 2020, Annual Compliance Report, the WWTP continues to be operated in a manner that promotes nitrification. Total nitrogen loadings for 2019 were higher than for 2018. It should be noted that effluent nitrogen concentrations were historically measured infrequently based on Permit requirements. Prior to the current Permit, nitrogen measurements were made once per month.

However, the current Permit requires monitoring twice per month for parameters related to total nitrogen. Given the variability of the flows and nitrogen concentrations, and the change in testing frequency, the results may not be representative for comparison across the data range presented. Any changes with respect to the concentration of effluent total nitrogen and/or any operational changes specific to nitrogen will be documented in future BMP



### **3.1.2 PHOSPHORUS**

BMC is currently required to report effluent total phosphorus concentrations. It should be noted that the seasonal limit of 1.26 milligrams per liter (mg/L), as outlined in the Permit for May through October, will be in effect at the end of the compliance period (February 28, 2021).

The average influent total phosphorus concentration was 5.26 mg/L and the average effluent concentration was 3.15 mg/L. It was observed that on average, 92% of the effluent total phosphorus is soluble orthophosphate.

Since total phosphorus is amenable to precipitation using aluminum salts, laboratory trials were conducted to determine phosphorus removal using alum, aluminum chlorohydrate, and polyaluminum chloride.

Alum appeared to be the most effective. At a dosage of 200 mg/L, both total phosphorus and total phosphorus were reduced well below the Permit limit with values <0.1 and <0.023 mg/L, respectively.

In addition to treatment alternatives, work was done to identify chemicals used in manufacturing that contained phosphorus. The only chemical found to contain significant amounts of phosphorus was a boiler treatment chemical names 424 Phosphate Disp. This chemical was replaced in mid-August 2019 with Dispersal HP-2500 and is no longer in use.

During 2020, additional work is planned to confirm these results and to evaluate removal at lower dosages. Work will also be done to determine the engineering requirements for implementation of chemical treatment for phosphorus reduction. Any changes with respect to phosphorus will be documented in future BMP.

### **3.1.3 COPPER**

BMC is currently required to report effluent total copper concentrations. However, the limit of 22 micrograms per liter (µg/L) will be in effect at the end of the compliance period (February 28, 2021).

The average influent Cu concentration as determined from samples collected between January and December 2019, was 63 µg/L and the average effluent concentration was 56 µg/L. Effluent concentrations were more stable at the end of 2019 with values often below 30 µg/L.

In December 2018, the Quality Assurance Project Plan (QAPP) was submitted to MassDEP for conducting water quality monitoring to be used in a Biotic Ligand Model (BLM) to further assess the site-specific copper criteria used to establish BMC's Permit limit. Sampling of two in-river locations and the effluent began in May 2019 and continued through December 2019. Testing is scheduled to be completed in the Spring of 2020. Based on the model results, the need for copper removal from the effluent will be further evaluated.

Additional testing is planned in 2020 to evaluate methods of effluent copper removal if the BLM does not provide a site-specific limit that will not require further treatment. These efforts will include treatment and source reduction options. Any changes with respect to copper will be documented in future BMP.

#### **3.1.4 TOXICITY**

The current NPDES Permit limit for acute toxicity is an LC50 of >100% and for chronic toxicity the limit is a chronic No Observed Effect Concentration (C-NOEC) of >5%. At the end of the compliance period the C-NOEC becomes more restrictive with a limit of >7.2%.

Acute toxicity levels exceeded (were more toxic) the Permit limit during January and October quarters while the chronic limit was exceeded for January, April, and July quarters. IC25 values are consistent with the C-NOEC values. All the chronic values exceeded the pending limit 7.2%.

To better understand the cause of toxicity, acute and chronic testing was performed on an effluent sample with the following additional treatment:

- Activated carbon to remove dissolved organics;
- Membrane filtration (0.045µm) to remove colloidal and suspended solids;
- EDTA treatment to chelate copper and other metals; and
- Chemical Coagulation using PAC.

Unfortunately, none of these treatments significantly improved the toxicity when compared to the untreated sample. There is concern that trace levels of herbicide or pesticides are present as contaminants on the cotton and are being removed during the scouring process. These compounds may be highly toxic and resistant to biodegradation or biodegrade into more toxic by-products.

Additional work is proposed to identify the cause of the toxicity or to identify treatment alternatives. Chemicals used in manufacturing have been evaluated and one of the scouring agents is being replaced due to its relatively high concentration of aromatic compounds. Toxicity testing is being considered for other manufacturing chemicals. Testing is also proposed to evaluate for the presence of trace levels of pesticides or herbicides that may be present on the raw cotton.

In terms of treatment alternatives, additional testing is proposed to further evaluate the use of advanced oxidation and other treatments including those outlined in the EPA Aquatic Toxicity Identification Evaluation (TIE) protocols.

### **3.2 CHEMICAL AND/OR PETROLEUM STORAGE AREAS**

Please see the [Material Storage Table](#) in [Appendix C](#) for a list chemicals, substances and mixtures utilized at the BMC Colrain MA Facility. Please refer to [Figure 4](#) through [Figure 9](#) for the approximate storage location of each chemical, substance, and mixture. Copies of the Safety Data Sheets (SDS) are provided by area in [Appendix D](#).

#### **3.2.1 LOWER BLEACHERY (BUILDING 134)**

The Lower Bleachery includes a total of eight aboveground storage tanks (AST) ranging in size from 196-gallons (empty plastic sulfuric acid tote) to 10,000-gallons (sodium hydroxide 50%). Additional material storage includes, Dissolvine D-40 Chelator (2,500-gallons), sulfuric acid 93% (300-gallons), Lava Wash (5,400-gallons), sodium bisulfate (2,000-gallons), several pallets containing approximately 2,000 pounds of citric acid bags and several 55-gallon drums containing Mayoquest 1860. Material storage in the lower bleachery is primarily located in the west-central and north-west portions of the building. Materials stored in the lower bleachery consist primarily in liquid form.

### **3.2.2 UPPER BLEACHERY (BUILDING 134)**

The Upper Bleachery includes, but is not limited to numerous plastic and metal 55-gallon drums containing sodium silicate, serasperse SS600, Myron HD, Amihold 1140, Idrosolvan-RD7, Permulsin-AO300, Evosoft SFBM, SetilonKNL, several pallets containing approximately 2,000 pounds of citric acid, organic soap and vegetable soap and two plastic storage totes containing a total of 5,500 pounds of glycerin 99.7%-100%. Material storage in the Upper Bleachery is primarily located in the central and northern portions of the building. Materials stored in the Upper Bleachery consist primarily in liquid form. Several products present in the upper bleachery are currently being used as part of a trial basis and include sodium acetate, Fluftone-AZS, Fluftone CPE, Intratex – RTA and magnesium chloride.

### **3.2.3 FILTER AND BOILER HOUSE (BUILDING 116 AND 117)**

The Filter House (Building 116) contains one plastic 55-gallon drum containing sodium hydroxide 50%. The sodium hydroxide drum is located on the southeastern portion of the building.

The Boiler House (Building 117) contains numerous plastic and metal 55-gallon drums containing Dispersall HP-2500 Polymer, Oxtrol DS Amine, Volamine RL-202 Sulfite, water line cleaner and caustic. Materials stored in the Filter and Boiler House consist primarily in liquid form.

Located immediately south of the Boiler House are four 20,000-gallon low sulfur diesel ASTs. The tanks are double-walled and are situated on steel saddles on an elevated concrete base. The tanks are equipped with interstitial leak detection, emergency vents and fill gauges.

One 500-gallon double walled low sulfur diesel AST is located immediately west of the Boiler House. This tank is also situated on steel saddles on a concrete base.

### **3.2.4 MAINTENANCE SHOP AND RAW COTTON HANDLING (BUILDING 118)**

The Maintenance shop performs maintenance on leased fork trucks and scissor lifts. Maintenance operations are performed on an in-frequent basis by contract personnel in the area between Building 117 and 118.

Waste oil generated as part of the maintenance operations is placed inside 55-gallon drums and stored outside of the maintenance shop in a waterproof plastic enclosure which also acts as a secondary containment. The Maintenance Shop and Raw Cotton Handling Building does not contain bulk storage of any chemical and/or petroleum products.

### **3.2.5 WASTEWATER TREATMENT PLANT (BUILDING 133 AND OTHERS)**

The WWTP collectively refers to three separate buildings including the larger WWTP building, and two smaller concrete buildings located immediately south. The building located furthest south is referred to as the Blower Building.

The larger WWTP Building contains four 500-gallon storage tanks ranging. The storage tanks are constructed of fiberglass and/or plastic and are used as follows: polymer – 500-gal.; anti foam – 500-gal.; process water – 500-gal.; and polymer/water mix tank – 500-gal. Material storage in the WWTP building is primarily located in the northwestern portion of the building and consist primarily in liquid form. The smaller Blower Building includes several pallets containing approximately 2,800 pounds of lime and 1,250 pounds of lime quick which are in the northern portion of the building.

### **3.2.6 SCREEN BUILDING (BUILDING 132)**

The Screen Building (Building 132) contains two metal 55-gallon drums containing sulfuric acid 93% and Mayoquest and one 1,000-gallon carbon steel 50% sodium hydroxide AST. The sodium hydroxide AST and drums are in the east-central and southern portions of the building, respectively. Materials stored in the Screen Building consist primarily in liquid form.

### **3.2.7 AREAS OF MATERIAL TRANSFER**

Operators typically conduct loading/unloading of liquid and solid materials at industrial and commercial facilities at shipping and receiving, outside storage and fueling areas. Materials transferred can include products such as raw materials, intermediate products, waste materials, fuels and scrap metals. Leaks and spills of fuels, oils, chemicals, organics, acids and alkalis can occur during transfer. Spills from hydraulic line breaks may also occur at loading docks.

### **3.2.8 SLUDGE STORAGE**

Sludge generated because of Facility operations is stored within with WWTP building. Sludge is transported via a belt press into a poly-lined roll-off container. The belt press drop-off point is the last point in the stabilization process. Sludge is collected by a private third-party on an approximate weekly basis, but occasionally on an as-needed basis.

The collected sludge is managed off-site by the third-party and is used for soil amendment purposes. The full roll-off container is removed by the third-party and exchanged for an empty one.

### **3.2.9 PARKING AREAS, GROUNDS AND DRIVEWAYS**

Normal building and grounds maintenance activities include snow plowing, de-icing, maintenance of the stormwater collection and conveyance system, maintenance, and repair of electrical and mechanical systems, and general housekeeping.

Various chemical products, including paints, cleaners, oils, salts, and greases may be used during these operations. In addition, transporting of 55-gallon drums of chemicals via fork truck from one building to another does occur.

### **3.2.10 SURFACE DRAINAGE AND RUNOFF**

The Facility's storm water conveyance system (SWCS) is comprised primarily of an underground network of pipes, catch basins, and drain lines located across the Facility. The Facility utilizes six outfall pipes that receive and ultimately discharge stormwater off-site. The six outfall pipes are representatively sampled and monitored under the EPA MSGP and are further discussed below. The Facility's SWCS is further depicted on [Figure 3A](#) and [Figure 3B](#).

#### **Outfall 2**

Outfall 2 is located in the eastern wall of the concrete swale immediately northwest of the Bleachery Building. Outfall 2 receives stormwater from catch basin CB-1, which is located near the loading dock on the northeast corner of the Bleachery Building. In addition to stormwater runoff from CB-1, Outfall-2 receives stormwater from an underground pipe that discharges stormwater from the office area roof drains. CB-1 contains a gate valve that is closed when loading and/or unloading activities are occurring at the loading dock.

Outfall-2 ultimately discharges into the a 72" conduit that is part of the canal/tailrace system. The canal/tailrace system discharges to the North River.

### **Outfall 3**

Outfall 3 receives stormwater runoff from catch basins CB-5 and CB-6, which are located near the loading docks on the west side of the Bleachery Building.

Catch basins CB-5 and CB-6 receive stormwater from the asphalt paved parking in the vicinity of the loading docks via a trench. Stormwater ultimately discharges into the 72" conduit via Outfall 3. The 72" conduit is part of the canal/tailrace system which ultimately discharges to the North River.

### **Outfall 4**

Outfall 4 receives runoff from catch basins CB-4, CB-7 and CB-8, which are located in the asphalt paved parking area approximately 46' west of the Bleachery Building's loading docks. Outfall 4 discharges into the 72" conduit which is part of the canal/tailrace system. The canal/tailrace system ultimately discharges to the North River.

### **Outfall 5**

Outfall 5 is a 6" steel pipe with a normally open gate valve, located between the Screen Building and the aeration basin retaining wall. Runoff from the parking lot enters the pipe and travel via sheet flow to Outfall 5, where stormwater is discharges to the tailrace and ultimately the North River. Prior to the September 1, 2019 release of sulfuric acid, the runoff continued along a slope onto a paved flume which drains into a concrete box (for erosion control) before spilling into the tailrace just downstream of the outlet of the 72" conduit. As part of the spill response actions, the asphalt paved flume was removed, and soil was excavated. Restoration activities consisted of filter fabric and ½-inch trap rock. Remaining areas of exposed soil will be loamed and seeded, and an erosion control blanket were placed over top.

### **Outfall 6**

Outfall 6 is a 6" steel pipe with a normally open gate valve located in a concrete headwall at the bank of the North River, west of the WWTP. Outfall 6 collects runoff from the parking lot, which includes runoff from roof drains on Buildings 118 and 119. Runoff enters the pipe and is discharged to the riverbank.

### **Outfall 7**

Outfall 7 is comprised of two breaks in the west wall of the concrete swale immediately northwest of the Bleachery Building. Outfall 7 receives sheet runoff from a depression in the landscaped area north and west of the Bleachery Building. Outfall 7 discharges into the 72" conduit which is part of the canal/tailrace system. The canal/tailrace ultimately discharges to the North River.

### **3.2.11 CONSTRUCTION ACTIVITIES**

If construction related activities are needed at the BMC Facility that require the alteration, transport or storage of soil and/or construction material, the following BMPs will be implemented (not limited to);

- Filing of a Request for Determination of Applicability (RDA) or Notice of Intent (NOI) for construction activities within one or more resource boundaries defined under the wetlands protection act (WPA), local bylaws and/or NPDES;
- Cover soil/debris stockpiles under secure poly sheeting or other temporary covering;
- When possible schedule excavation/grading work during dry weather;
- Immediately clean up leaks and/or spills related to on-Facility heavy machinery;
- Identify all storm drains, drainage swales and surface water near the construction site and review requirements of BMP with subcontractors;
- Use terracing, rip rap, sandbags, rocks, straw bales, and/or temporary vegetation on slopes to reduce runoff velocity and trap sediments;
- Dispose of all waste properly. Many construction materials, including solvents, water-based paints, vehicle fluids, broken asphalt and concrete, wood, and cleared vegetation can be recycled; and
- Train employees and subcontractors in erosion and runoff control procedures.

### **3.3 NON-DESTRUCTIVE TANK INSPECTIONS**

In December 2019, BMC contracted CorrTech Inc (CorrTech) to perform Nondestructive Inspections (NDI) of the four 20,000-gallon ultra-low sulfur (ULSD) diesel ATs, one 500-gallon No. 2 fuel oil AST, and one 10,000-gallon hydrogen peroxide AST. The inspections were performed in accordance with Steel Tank Institute (STI) Standard SP-001. A copy of the reports are included in [Appendix E](#).



### **20,000-Gallon ULSD**

The four 20,000-gallon ULSD fuel ASTs were determined to be fit for continued service. The ASTs are Category 1 tanks with a capacity between 5,001 - 30,000 gallons, which requires periodic AST inspections (monthly or yearly) by the owner's inspector and a formal external inspection performed by a Certified Inspector every 20 years at minimum, per STI SP001 standards.

### **10,00-Gallon Hydrogen Peroxide**

The 10,000-gallon hydrogen peroxide AST was found to be fit for continued service; however, the ASTs secondary containment was found to be insufficient for the nominal tank volume. Without spill control and Continuous Release Detection Method (CRDM) in place on the AST, the tank is designated as a Category 2 tank. A Category 2 tank with a capacity between 5,001-30,000 gallons requires periodic AST inspection (monthly or yearly) by the owner's inspector, a formal external inspection performed by a Certified Inspector every 10 years at minimum, and a formal internal inspection performed by a Certified Inspector every 20 years. Alternatively, a formal external inspection can be performed every 5 years, and a leak test performed every 10 years, per STI SP001 standards. BMC is currently working with CorrTech and an outside contractor to address the secondary containment requirements, the results of which will be included in a future BMP.

### **500-Gallon No. 2 Fuel Oil**

The 500-gallon No. 2 fuel oil AST was found to be fit for continued service due to the integrity of the outer tank. With spill control and CRDM in place, the AST is designated as a Category 1 tank. A Category 1 tank with a capacity less than 1,100 gallons requires periodic AST inspection (monthly or yearly) by the owner's inspector, per STI SP001 standards. CorrTech recommended that the fluid in the interstice be drained to verify the presence of oil. If oil is present a leak may have formed. BMC is currently working to address the fluid in the interstice and will take appropriate actions if/as necessary.

## **4.0 DESCRIPTION, OPERATION & CONTROL OF WASTEWATER TREATMENT**

Please refer to [Appendix A](#) for flow diagrams and schematics of the collection system, raw waste, activated sludge and activated sludge chemical addition and sampling.

#### **4.1 INFLUENT COLLECTION SYSTEM**

Industrial wastewater discharge from the Cotton Bleachery (Barnhardt) flows, by gravity, via two separate pipelines to the collection manhole (SMH-8). Sanitary wastewaters from the various lavatories located within the production facilities are carried through the same pipeline system as industrial wastewater. Sanitary wastewaters from the Village of Griswoldville enter Manhole "SMH-8", by gravity, through a separate 6" cast iron pipeline.

An area of paved surface between the bleachery and the hydrogen peroxide and bulk water storage facilities, drains to catch basins and is discharged by gravity, to the treatment Facility. This paved area is broken into two dished areas with a bituminous berm boundary between the areas and one along the south edge. All of the paved surface area that is bounded by the berm to the south, the cotton bleachery on the east, concrete wall on the west, and bituminous curb on the north, is pitched to drain into catch basins CB-2 and CB-3. The primary purpose of this area is to serve as spill containment for loss of material from the rinse liquor silo, from the bulk chemical delivery area and the hydrogen peroxide tank containment.

The collection manhole, Manhole "SMH-8", has three inlet pipes, corresponding to the two-yard pipes, conveying wastewater as described above and Griswoldville Sanitary wastewaters. Collection manhole SMH-8 has two outlets, one discharge pipe connects to the wet well splitter box to the influent pump station, and one pipeline connects to the underground storage tanks.

The underground storage tanks consist of four concrete basins interconnected to act as one, large storage vessel. Due to the nature of batch processes in production, instantaneous discharge quantities may exceed the capacity of the activated sludge process. In this case, the wastewater will fill the wet wells and surcharge (overload and back-up) into the four, 5000-gallon concrete underground storage tanks. These underground tanks serve as surge vessels and may achieve a small amount of self-neutralization when wastewaters that may be acidic and alkaline are discharged together.

As the liquid level in the screening building wet well drops, the accumulated wastewaters stored in the underground tanks drain into the wet wells and are pumped to the aeration basin. The storage tanks prevent the aeration basin from an overload which may adversely affect the wastewater treatment process.

Wastewaters flow from the collection manhole and/or the underground storage tanks to a splitter box located below grade in the screen building. The function of the splitter box is to allow wastewater to enter either one or both wet wells according to the desired method of operation.

The wet wells have a combined storage capacity of approximately 10,000 gallons. Two, 12-inch cast iron gate valves are installed in the two discharge lines from the splitter box to the east and west wet wells. By manually opening or closing these valves, the operator allows wastewater to flow to both wet wells simultaneously or into a single wet well when maintenance of the other is required. The valves are operated by removing the valve stem cover, located in the garage of the screening building, and inserting the valve key on the stem.

In addition, the wet wells can operate as a single storage vessel by opening the 18-inch cast iron valve between the wet wells. When open, the wet well liquid levels will rise and fall together dependent on influent and effluent rates. This valve is operated, and located as described above for the two, 12-inch valves.

#### **4.2 INFLUENT PUMPING**

Two recessed impeller, centrifugal pumps take suction from the wet wells and pump the raw (untreated) wastewater to the screen units. Each wet well has two valved outlets, combining in a single suction header. Two suction lines, one to each raw wastewater pump, take suction from the header pipe. A third line is available should a third pump ever be put into service. The primary pump (pump #1) operates most of the time, pumping raw wastewater to the bank of wedge-wire hydro sieves. Each raw wastewater pump is rated at 650 gallons per minute (GPM) against a total dynamic head of 51 feet and operates with a 25 horsepower (hp) motor.

The two pumps (#1 and #2) are controlled by a variable frequency drive giving them the ability to match influent rates. Variable speed operation is preferred when operating an activated sludge process. An effluent high-high alarm lasting more than 1,000 seconds or more will shut off the raw waste pumps.

#### **4.3 SCREENING**

The raw wastewater pumps transport the untreated wastes to the top floor of the screening building. Six wedge-wire hydro sieves (screens) remove coarse solids from the waste stream.

During the screening process coarse solids are removed. The solid fraction of the raw wastewater consists primarily of textile fibers.

The fibers are removed on the face of each screen, while wastewater can pass through the narrow openings to be discharged to the aeration basin. The screens are essentially self-cleaning, due to the flow-through design; however, they do require operator attention to remove accumulated solids that are not "washed" down the screen by the wastewater flow.

Typically the operator washes down the screens once daily to collect the solids screened out of the process wastewater into a bermed area, which includes a grate covered floor drain, between the screens and physically moves them to a holding area with an uncovered floor drain, located at the north end of the screen banks. The physical washing and removal perform three functions:

- Clears the grate over the floor drain and assures drainage in the sump area between the screens and keeps the open floor drain clog-free;
- Allows excess water from the fibrous materials to settle out before discharging the solid mass through the floor hatch into a disposal vehicle; and
- Allows the screens to operate more efficiently.

If the solid materials are not collected by the operator and removed from the sump area, they may clog the gravity drain and flood the sump. In this case, a float activated alarm notifies the operator of a sump flood condition. The screening units are Bauer Model 552.2 and have a hydraulic loading of 240 GPM each. The screens are constructed of 316 stainless steel, are 60-inches wide across the face of the screen and have an opening 0.02-inch wide between individual wires.

Typically, the incoming wastewater pH value is alkaline ( $\text{pH} \geq 9$ ) due to the processes in the bleachery. The biological process has enough excess dissolved oxygen (DO) to allow the creation of carbonic acid by the bacteria, which sufficiently neutralizes the aeration basin, maintaining a pH of 8.0 – 8.5 standard units (S.U.).

Sulfuric acid is available, if needed, to be added to the screened wastewater to bring the pH value closer to the normal operating range should a higher than average pH be detected. The

aeration system provides rapid mixing of the influent into the basins which avoids 'shocking' the aeration basin with the caustic waste stream.

The caustic nature of process wastewater discharges from the bleachery act as a "disinfectant" eliminating pathogens associated with the domestic or sanitary sewerage portion of the combined waste stream. When the Facility is not discharging process wastewaters, sodium hydroxide must be added to the wastewater to provide for the pathogen kill normally associated with process wastewater.

Typical manual addition of sodium hydroxide consists of intermittent chemical dosing, pH adjustment is monitored, and chemical is added, as necessary.

The sodium hydroxide storage tank and metering pumps are located on the ground floor of the screening building. Daily pH monitoring of the raw wastewater influent will alert the operator to energize the sodium hydroxide (caustic) metering pumps, raising the pH of wastewater to the set point value. The high pH will kill the fecal coliform organisms in the domestic wastewater prior to screening and discharging into the aeration basin. When the Facility is in operation, there is enough caustic waste discharge to kill the pathogenic organisms and eliminate the need for sodium hydroxide addition.

#### **4.4 AERATION BASIN**

Screened wastewater flows by gravity to the aeration basin which is divided into two sections. The aeration basin is approximately 320 feet X 155 feet with a maximum depth of 17 feet. Maximum capacity of the aeration basin is 3.3 million gallons. The aeration basin has two influent pipelines and four effluent structures.

The existing aeration basin, which was upgraded in 1991 is concrete with sharply sloping side walls. The existing aeration basin replaced the original membrane lined; sand formed aeration basin constructed in 1972. During the renovation of the aeration basin, a concrete dividing wall and catwalk was installed to separate the aeration basin into two, equal volume basins known as the "north and south aeration basins". Three openings in the dividing wall allow the aeration basin system to be operated in parallel or in series.

The dividing wall openings are fitted for the installation of stop logs to raise or lower the basin volumes. The stop logs are also used in conjunction with the four effluent structure stop logs to operate the aeration basin system in one of the four following modes:

1. Parallel operation of both north and south aeration basins.
  - Division wall stop logs installed; and
  - Effluent structures stop logs removed (except when greater aeration basin volume is required).
2. Series operation with influent entering the north aeration basin overflowing into the south aeration basin and exiting the south aeration basin effluent structures.
  - Division wall stop logs removed;
  - North aeration basin effluent structures stop logs installed; and
  - South aeration basin effluent structures stop logs removed.
3. Series operation with influent entering the south aeration basin overflowing into the north aeration basin and exiting the north aeration basin effluent structures.
  - Division wall stop logs removed;
  - North aeration basin effluent structures stop logs removed; and
  - South aeration basin effluent structures stop logs installed
4. Single basin operation of the north or south aeration basin.
  - Division wall and effluent structures stop logs installed.

Parallel operation entails simultaneous introduction of wastewater into both aeration basin sections with subsequent discharges from both aeration basins. The dividing wall openings are not utilized. Conversely, when the openings are utilized to allow flow from one basin to the other, the aeration system is operated in series. Thus, introducing all wastewater influents into one side of the aeration basin, overflowing the dividing wall openings, and flowing out the effluent structures of the other basin as described above.

The WWTP average design flow capacity is 1.3 mgd, however the plant is currently operating at 25% capacity with an average flow of 0.33 mgd. The total volume of the north and south aeration basins is around 1.65 mg providing an average HRT of 10 days with both basins in service. The typical HRT for a textile WWTP, using the extended aeration process, is 2 days or less. Given the excessive HRT with both basins in operation, the southern aeration basin was taken out of service on 8/27/2018 to increase the mixed liquor suspended solids (MLSS) concentration and to enhance solids flocculation and settleability. Please refer to [Appendix F](#)

written statement from BMCs wastewater consultant engineer, Applied Technology and Engineering, P.C., as it relates to the operation of one WWTP aeration basin.

When operated as a single basin, the remaining aeration basin can be placed into service (parallel or series) for excess capacity or if the active aeration basin requires maintenance. When operating as a single basin, the northern or southern aeration basins may be used. No physical equipment or piping changes are made and the use of one basin is accomplished using existing capabilities.

As previously stated, wastewater flows to the aeration basin by gravity discharge from the screen building. The discharge is directed to one of two 12-inch diameter pipelines by physically inserting a "line blind" downstream of the 12-inch tee fitting.

Normal operation flows to the pipeline that feeds along the east wall of the aeration basin. The other 12" line is capable of being put into service in the event of a catastrophic failure of the primary line. The balance of flow into the north and south aeration basins is determined by the operators by opening or closing intake valves to discharge along the east perimeter wall of the aeration basins.

Normally, flow enters each side of the aeration basin (parallel operation) through two, 45° elbows installed on either side of the 12-inch influent pipe. A monitoring pH probe is installed on the north aeration basin, as a final check of influent pH value. The purpose of splitting the influent introduced into each section of the aeration basin is four-fold:

- To provide additional mixing;
- To keep solids in the aeration basin in suspension;
- To mitigate the effects of the raw wastewater's temperature and chemical constituents on the biomass (microorganisms) under aeration; and
- To equilibrate loadings to each basin.

The discharge from the aeration basin(s) (mixed liquor) enters four effluent structures; two per aeration basin section. The effluent structures have provisions for the installation of stop logs which allow greater volume in the aeration basin and are required when aeration in series is desired. By installing stop logs in the northern aeration basin, effluent structures and removing stop logs in the division wall, wastewater introduced into the north aeration basin will flow in

series from the north to south aeration basin and discharge through the south aeration basin effluent structures. The system may also flow from south to north if the stop log settings are reversed.

The four effluent structures drain to structure No. 1, located on the west end of the aeration basin catwalk. Flow to structure No. 1 is by gravity in two, 10-inch diameter pipelines which collect the mixed liquor from each of the aeration basin effluent structures.

Each 10-inch influent pipe to structure No. 1 is valved so that the aeration basins may be run in series as described earlier in this section. Two 16-inch diameter cast iron pipelines convey the mixed liquor from Structure No. 1 to the clarifiers, one pipeline per clarifier. Valving is provided for these discharges to the clarifiers so that either unit can be taken "off-line" for servicing. The valves are also used to regulate the flow to the clarifiers so that each clarifier can be loaded equally.

The activated sludge process consists of a continuous microbial growth process using recycled microorganisms and organic matter in wastewater as the food source.

During aeration, organic matter is converted to additional activated sludge (microorganisms), energy for cellular activity and waste by-products. Oxygen is critical to the activated sludge process to allow the micro-organisms to perform their required roles in wastewater treatment. These roles include the following:

- Clarification of secondary effluent through the removal of bacteria;
- Degradation of organic wastes with CO<sub>2</sub> and H<sub>2</sub>O as byproducts; and
- Information of additional microorganisms to continue the activated sludge process.

The oxygen requirement for the aeration basin is met by operation of centrifugal blowers which provide compressed air to the diffuser units. One 150 hp and one 100 hp centrifugal blowers are installed in the blower building adjacent to the south aeration basin.

The blowers are manufactured by Hoffman Air & Filtration Systems, Model No. 74106A1, which provide approximately 2,200 CFM each to the diffused air system. The diffuser air system is a fixed grid fine bubble installation, utilizing 160 diffuser tubes per aeration basin. The system consists of a 12-inch diameter steel central air header with six 6" diameter anchored stainless steel pipes,



each with an isolation valve, extending from the header down along the west slope of the aeration basin. Each pipe feeds a 6" diameter header at the base of the slope.

The headers feed 20 anchored laterals made up of 8 perforated membrane tubular segments in series. The system was designed, manufactured and installed by EDI (Environmental Dynamics International) under the trade name Streamline®.

#### **4.5 CLARIFICATION**

Two secondary clarifiers are employed to receive the mixed liquor overflow from the aeration basin. The clarification process separates liquid and solid phases of the mixed liquor. This allows the sludges (solid phase) to be removed from the treatment process, or to be returned to the aeration basin and the clarified liquid to overflow the tanks for discharge to the North River outfall.

The two units are circular collectors, 55-ft. in diameter, 12-ft. in depth, with sloping bottoms and collector mechanisms to remove sludges. Each clarifier contains approximately 230,000 gallons. The north unit is a Model RSP, manufactured by Walker Process Equipment, the south unit is a Model S, manufactured by Dorr-Oliver, Inc. Mixed liquor feed enters from the bottom of the tank through the center column and goes into the clarifier through ports. The influent well prevents short-circuiting and directs the flow radially downward to the periphery of the tank. Overflow is collected in peripheral troughs provided with adjustable serrated weirs.

The overflow (clarified water) is discharged from each clarifier in 16-inch diameter pipelines that meet in structure No. 2. Sludge is withdrawn from the bottom of each clarifier and returned to the aeration basin or fed to the belt filter press.

Each clarifier has a skimming arm which removes floatable materials, typically a scum layer on the clarifier water surface, and deposits them into a scum well. The scum well is pumped out as required. The operator must valve the scum well open to one of the return activated sludge pumps, start the pump and operate the pump for approximately five minutes each time. When completed, the operator must return the valves to their original positions to continue pumping return activated sludge to the aeration basin. The wastewater treatment Facility final pH reading is taken in the north clarifier effluent launder. The readout is in the filter building annex and is available from the computer data.

#### 4.5 DISCHARGE

Treated wastewater flows from structure No. 2 by gravity in a 16-inch pipeline, through the flow metering chamber and is discharged to the North River. The flow metering channel includes two flow measuring devices; a primary unit (Parshall flume) and a secondary unit (ultrasonic transducer). A flume is a specially shaped channel section providing a restriction in channel area, which results in an increased velocity and change of liquid level. The constricted throat of the Parshall flume produces a differential head that can be related to discharge. The differential head relates to a liquid level change, which is sensed by the secondary flow measuring unit, the ultrasonic transducer.

The changes in liquid level are monitored by the ultrasonic transducer and translated to instantaneous flow value which is displayed on the computer and flow indicator in the lab area. In addition to the computer and flow meter displays, a 24-hour circular chart continuously records the discharge quantity.

#### 4.6 CHEMICAL ADDITION

A comprehensive list identifying chemical and/or additives utilized at the Facility is provided in [Table 3](#).

**Table 3 – CHEMICAL AND/OR ADDITIVE USE**

<b>Chemical/Additive</b>	<b>Frequency (Hourly/Daily)</b>	<b>Duration (Hours/Days)</b>	<b>Avg. Quantity</b>	<b>Max Quantity</b>	<b>Method of Application</b>
Sur Floc Polymer	Daily	-	80 pounds (lbs.)	100 lbs.	Wasting Belt Press
Antifoam 30L	Daily	-	10 lbs.	10 lbs.	Injection Pump
Lime	As Needed	-	-	-	Manual Feed
Oxtrol DS Amine	Daily	24	60 ounces (oz)	60 oz	Manual Feed
Volamine RL-202 Sulfite	Daily	24	80 oz	80 oz	Manual Feed
Hydrogen Peroxide	Trade Secret (TS)	-	-	-	-

<b>Chemical/Additive</b>	<b>Frequency (Hourly/Daily)</b>	<b>Duration (Hours/Days)</b>	<b>Avg. Quantity</b>	<b>Max Quantity</b>	<b>Method of Application</b>
Salt Crystals	Weekly	-	4 lbs.	4 lbs.	Manual Feed
Sulfuric Acid	WWTP – Daily Production (TS)	-	-	-	Injection Pump
Mayoquest	(TS)	-	-	-	-
Sodium Hydroxide	(TS)	-	-	-	-
Dissolvine D-40 Chelator	(TS)	-	-	-	-
Lavawash	(TS)	-	-	-	-
Sodium Bisulfate	(TS)	-	-	-	-
Citric Acid	(TS)	-	-	-	-
Sodium Silicate	(TS)	-	-	-	-
Serasperse SS600	(TS)	-	-	-	-
Glycerin	(TS)	-	-	-	-
Mykon HD	(TS)	-	-	-	-
Amihold 1140	(TS)	-	-	-	-
Organic Soap	(TS)	-	-	-	-
Vegetable Soap	(TS)	-	-	-	-
Idrosolvan-RD7	(TS)	-	-	-	-
Permulsin-AO300	(TS)	-	-	-	-
Evosoft SFBM	(TS)	-	-	-	-
Methanol	(TS)	-	-	-	-
Ethyl Ether Anhydrous	As Needed	-	450 milliliters (ml)	450 ml	-
2-Propanol	As Needed	-	100 ml	100 ml	-

## **5.0 DESCRIPTION, OPERATION & CONTROL OF DEWATERING AND SLUDGE HANDLING**

### **5.1 DEWATERING AND SLUDGE HANDLING**

Sludge withdrawn from the clarifiers and removed from the wastewater system (waste activated sludge) is pumped to a belt filter press for dewatering.

The mechanical dewatering device is a three-belt, multiple-stage, belt filter press, Model GMR manufactured by Komline-Sanderson Corporation.

During belt filter press runs, waste activated sludge and polymer are pumped to a press mounted mixing chamber where flocculation of the sludge by polyelectrolytes (polymer) occurs. The flocculated sludge allows "free water" to be released for gravity dewatering and further conditions the sludge for pressure dewatering. The free water, which is released because of the reaction between the polymer and sludge, is drained through the relatively open weave of the gravity belt on the belt filter press. The gravity belt is independently driven and can be increased or decreased in speed to optimize removal of free water. The discharge from the gravity belt is chemically conditioned sludge which is ready for the application of pressure as the sludge material compressed between two porous belts.

The sludge is compressed between two belts, each having a relatively tighter weave than the gravity belt. The tighter weave holds the thickened sludge and allows bound water to be released as the belts travel over and under a series of rollers of different diameters.

Both pressure and shear forces are exerted on the compressed sludge to assure maximum removal of water from the sludge. The pressure is developed through the tensioning of the belts and the serpentine path the belts travel. The shear forces are exerted as one belt "slips" by the other because of the different belt speeds when traveling over and under the pressure rollers.

The dewatered sludge is discharged from the end of the belt filter press and is removed by doctor blades (e.g. scrapers) which are counter-weighted exerting a slight pressure on the sludge side of each pressure belt. The sludge falls through the hopper into the sludge hauling container. Two manually operated fans are directed at the sludge falling from the chute and at the container, to enhance drying. The operator manually rakes the sludge to drag the cake to the front of the container assuring maximum loading of the vehicle. System start-up includes preparing the following ancillary systems:

- Compressed Air which is required for proper belt tensioning and tracking;
- Chemical Addition;
- Belt Wash Water; and
- Forced Air System for additional drying.

The operator must ensure plant air supply which is piped underground from the boiler building is functional and available at belt press. The operator must prepare first batch of polymer. Liquid polymer is stored in a 500-gallon tank.

The storage tank is sized so that a 350-gallon, intermediate bulk container or “tote” can be emptied into the tank when polymer storage is at the low level. Polymer is activated (wetted and uncoiled) through a polymer wetting system and is transferred to a 300-gallon polymer feed tank at a solution concentration of 0.5%. The operator must ensure that process water, which is piped overhead from the bleachery to the screen building, then underground to the lab annex, is available at the belt press and must manually turn on fans in truck bay.

When the above systems are set and ready to operate, the belt press operations are started by following the steps listed;

- Start belt filter press at the panel and;
- Check pressures of belt steering and belt tension;
- Check belt speeds for gravity and pressure belt systems;
- Check conditioning tank flocculator speed;
- Start belt wash water (from system chosen – process water) and verify wash water flow at belt filter press;
- Start polymer feed pump;
- Start waste activated sludge pump that has been properly valved to take suction from the sludge header pipe and deliver sludge to the belt filter press;
- Verify sludge container location, estimate volume available for dewatered sludge; and
- Monitor all system operations for a minimum of 30 minutes to assure proper system configurations;
  - Air pressure of belt tensioning and tracking;
  - Belt wash water pressure;
  - Belt speeds (gravity and pressure belts);
  - Conditioning tank flocculator speed;
  - Polymer pump speed; and
  - Discharge to sludge hauling container.

## **6.0 DESCRIPTION, OPERATION & CONTROL OF CHEMICAL & MONITORING SYSTEM**

### **6.1 AERATION BASIN**

Dissolved oxygen (DO) concentration is continually monitored in each aeration basin by submersible DO sensors. Discrete transmitter/controllers are provided for each sensor giving the operator a direct readout of DO concentration in parts per million (ppm). The meter is a Hach SC 200 and the sensor is a Hach LDO. pH is continually monitored in the aeration basin utilizing a Hach DPD1P1. Liquid anti-foaming chemicals are mixed to the desired concentration in a 500-gallon plastic mixing tank. Agitation of the solution is accomplished by a bolted on direct drive ¼ hp mixer, Series B, Model 6W063, manufactured by Neptune Mixer Co. Concentration is determined by the operator to minimize amount of chemical addition based on aeration basin conditions. Chemical addition of an anti-foaming agent to the aeration basin is accomplished through a continuous feed pulsatron positive displacement pump with a discharge injection point into the return activated sludge piping.

### **6.2 CLARIFIER**

The wastewater treatment Facility's final pH reading is taken in the north clarifier effluent launder. The readout is in the filter building annex and is available from the computer data.

### **6.3 BELT PRESS**

Liquid Polymer used for dewatering sludge is stored in a 250-gallon tote. The operator uses a pneumatic pump to transfer the polymer into the 750-gallon polymer mixing tank. Agitation of the solution is accomplished by a bolted on direct drive ¼ hp mixer, Series B, Model 6W063, manufactured by Neptune Mixer Co. Static mixer. A 1/5 hp progressive cavity metering pump transfers the mixed polymer up to the mixing chamber on the belt press.

### **6.4 EFFLUENT**

The filter building annex houses an antifoam storage and metering system. The antifoam agent is mixed with water by the separator and is continually agitated to keep the solution homogeneous. Approximately 2-gallons of antifoam agent are added to the 150-gallon storage tank. Water is added to fill the remaining volume. A Pulsafeeder Dolphin 50 metering pump is used to meter the solution into the plant effluent to reduce foaming of the discharge.

The metering pump capacity is 60 gallons per day. Typical addition rate of antifoam solution to the effluent stream is 35 gallons per day. Agitation of the solution is accomplished by a clamp-on, direct drive ¼ Hp mixer, Series B, Model 6W063, manufactured by Neptune Mixer Co.

## **7.0 SAMPLING**

Sampling is performed daily for operating parameters and analyzed in the onsite lab. Weekly sampling for nutrient loading and required NPDES analysis is performed and prepared for pick up by a certified lab. Samples for lab pickup are stored in a dedicated refrigerator maintained at or less than 6°C. Laboratory sampling equipment includes

- Temperature test equipment;
- PH test equipment;
- DO test equipment; and
- MLSS & MLVSS test equipment.

The benchtop pH meter is calibrated twice weekly and the results are documented on the pH Meter Calibration Record form.

### **7.1 INFLUENT SAMPLING**

Influent loading to the treatment plant is variable and largely dependent on whether the bleachery is operating and to a lesser degree, which products are being processed in the bleachery. Due to the large aeration basin capacity, along with comingling of process flows throughout any given day in the wet wells and underground storage tanks, individual process runs have a buffered impact on the total aeration basin loading.

Daily sampling is typically done by grab sample from the screens, which is immediately checked for temperature. The sample is then taken to the lab for pH measurement, utilizing a benchtop Thermo Scientific.

Weekly sampling of nutrients is accomplished in the same manner, with samples being prepared for pickup by a certified lab for testing.

Quarterly sampling for NPDES testing is performed by utilizing an Hach Sigma which uses an internal peristaltic (hose) pump to draw wastewater through a suction head and tubing, depositing each sample into a collection vessel. Samples are prepared for pickup by a certified lab for testing.

## **7.2 INFLUENT SAMPLING**

Grab samples are taken manually five days a week from the north and/or south aeration basins and taken into the lab for DO, temperature and pH readings. Additionally, a 1-liter sample is collected and allowed to settle for 30 minutes to determine settleable solids. The grab sample is also processed for MLSS and once weekly for mixed liquor volatile suspended solids (MLVSS). Aeration basin samples are also visually analyzed for life forms daily utilizing a 10X and 40X binocular microscope.

## **7.3 EFFLUENT SAMPLING**

Sampling of the effluent stream is required to determine wastewater discharge compliance with the NPDES Permit parameters. In addition, BMC is required to meet internal protocols with respect to effluent sampling. These internal protocols state that the wastewater discharge will not, at any time, exceed the NPDES Permit parameters.

If it is evident that wastewater discharge characteristics will result in the violation of any NPDES Permit criteria, operators must inform the plant manager of the situation. When the situation is not correctable, the bleachery must be shut down.

The sampler utilized for NPDES sampling and reporting in the filter building annex is an Hach Sigma refrigerated sampler. This unit draws effluent through a suction head/strainer and internal peristaltic pump, and deposits the samples in a composite vessel stored at 4°C. The operator removes the wastewater sample and send to a certified lab for required analyses. Effluent taken from the North Clarifier overflow is monitored five days a week by grab samples that are processed in the lab to determine pH, temperature, and mixed liquid suspended solids. Once weekly the sample is also processed for mixed liquor volatile suspended solids.



## **8.0 PREVENTATIVE MAINTENANCE PROCEDURES**

A wastewater treatment plant should be recognized as a highly specialized and complex system with the purpose of efficiently producing an acceptable effluent under varying influent conditions. A general maintenance program must be established to operate the wastewater treatment plant at peak efficiency. Failure to perform routine maintenance faithfully will lead to shortened equipment life and mechanical breakdowns resulting in a significant loss in operational efficiency and higher costs. An effective preventative equipment maintenance program will serve as an important and reliable means of preventing excessive wear and damage and will aid in extending the overall life of the equipment.

Plant equipment structures and related facilities must be maintained in a suitable condition to perform the services for which they were intended. Plant grounds, structures and equipment should always be kept clean, neat, and free from debris. Accumulations of dirt, grit or lubricants on painted surfaces and equipment may lead to premature wear and failure.

Protective coatings should always be maintained. Cleaning, scraping, and painting should be performed on a continual basis, as time permits, to reduce corrosion and rust.

The intent of this section of the manual is to outline a workable maintenance program. An essential step in preventing undue maintenance problems is to keep all equipment clean and maintained per the manufacturer's instructions.

### **8.1 EQUIPMENT OPERATION AND MAINTENANCE MANUALS**

Each piece of equipment has a manufacturer's Operations and Maintenance Manual which covers, in detail, the required maintenance, both preventative and repair. These manuals provide essential information on the set-up and start-up of equipment and any other procedures and precautions of relevance to each piece of equipment. Any plant personnel undertaking maintenance or repair of any piece of equipment should refer to these manuals first.

## **8.2 PLANNING AND SCHEDULING**

It is of utmost importance that maintenance scheduling be planned for times when they will cause the least disruption in operations. Normal preventative maintenance for each piece of equipment should be planned in accordance with the manufacturer's specifications.

Establishing a maintenance chart with a list of maintenance work to be done in order of priority will aid personnel in determining their work schedule and allow them to plan accordingly. If possible, schedule outdoor work for good weather and indoor work for inclement weather.

There may be times when equipment will need corrective maintenance (repairs). Corrective maintenance should be scheduled on a priority basis in these cases, depending on how vital the equipment is to the operation, and the severity of the work.

## **8.3 INVENTORY**

A review of the equipment and the manufacturer's recommendations should aid in determining what spare parts and miscellaneous supplies should be maintained for each piece of equipment.

The spare parts and components should be listed in a catalog, and the minimum and maximum quantity to be stocked should be established. Records should be maintained for all spare parts when taken out of the stock and when replaced.

## **8.4 PREVENTATIVE MAINTENANCE**

Preventative maintenance BMPs that are implemented at the Facility are recognized by the BMP Committee and are summarized below in [Table 4](#).

**Table 4 – PREVENTATIVE MAINTENANCE**

<b>Document No.</b>	<b>Description</b>
<b>WWTP Preventative Maintenance</b>	
WWTP-011	Daily Screen Cleaning
WWTP-012	Change Belts on Belt Press
WWTP-015	Cleaning Cotton from Valves
WWTP-024	Changing Filters on WWTP Air Blowers
WWTP-026	Pumping Scum Well
WWTP-032	Clean Belt Press
WWTP-033	Grease Belt Press
WWTP-037	Cleaning Polymer Tanks
WWTP-042	Cleaning Antifoam Tank in Filter Building
WWTP-053	Remove Belt Press Wash Box

**Table 4 – PREVENTATIVE MAINTENANCE (Cont.)**

<b>Preventative Maintenance of Existing Structures, Storage and Transfer Areas</b>	
PMSS-01	Routine inspection and required maintenance/repair of structural BMPs, including, but not limited to, such components as containment systems (walls, berms, etc.), drainage valves and pipes, impervious surfaces, and surveillance equipment
PMSS-02	Periodic inspections and proper tests of all equipment that can result in a discharge to the storm water systems, such as off-road vehicles traveling within the facility and Barnhardt owned and operated trucks
PMSS-03	Periodic maintenance of exhaust and air filtration screens and conveyances exposed to stormwater to minimize cotton fiber infiltration into storm water.
<b>Minimization of Exposure</b>	
ME-01	Control inventory to avoid unnecessary quantities of potential pollutants being stored.
ME-02	Limit outdoor storage of materials to bulk storage facilities. All other storage containers shall be stored indoors.
ME-03	All operation and maintenance activities shall be conducted only in designated area where run off is routed to the WWTP.
ME-04	Maintain cover over outdoor waste storage containers such as waste compacter container and cotton waste dumpster with waterproof lids or covers.
ME-05	Keep all containers covered, clean, and free of corrosion.
ME-06	Materials unsuitable for outside storage, i.e. batteries and open containers of oil and/or hazardous materials, are properly stored in the designated hazardous waste storage area.
ME-07	Close valve in CB-1 when unloading chemical containers at the loading dock.
ME-08	Close valve in trench drain sump in boiler building when unloading fuel.
ME-09	Chemical containers being transported around the Facility by forklift shall be securely strapped to a pallet or secured by forklift drum clamps.
ME-10	Chemical drums being transported by hand truck shall only be moved using appropriately weight rated equipment and shall be securely clamped or strapped in place.

## 8.5 MAINTENANCE PERSONNEL

It is the duty of each operator to see that only properly trained personnel conduct inspections, repairs, and preventive maintenance tasks. Properly trained personnel should possess a thorough knowledge of the functions and operations of the equipment and the procedures for servicing it.

A good maintenance management program must consider the limitations of plant operators and maintenance personnel. The program must also consider obtaining outside consultants or factory representatives to perform certain maintenance functions. [Table 5](#) presents a list of manufacturer trouble shooting guides for the Facility.

Table 5 – MANUFACTURERS TROUBLE SHOOTING GUIDES		
ITEM		LOCATION
1.	Waste Activated Sludge Pump WEMCO Model E	WEMCO Torque Flow Pump (1976 Dewatering Building) Page P10-D305.3
2.	Return Activated Sludge Pump Gorman-RuppT3A-60	Gorman-Rupp Company
3.	Raw Wastewater Pump WEMCO Model C	WEMCO Torque Flow Pump Page P10-D305.4
4.	Sulfuric Acid Pump Penwalt, Wallace & Tiernan Series 44	Wallace & Tiernan Series 44 Instruction Book No. WAA 400.200 Page 440.100-10
5.	Sodium Hydroxide Pump LMI Pulse a feed	Liquid Metronics Inc.
6.	Centrifugal Blowers Hoffman Air & Filtration Systems	Hoffman Blower Instruction Manual AM-412F Section VII Page 9
7.	Mixer, Polymer Lightnin Model XJ & XD	Lightnin Operating Instruction IT 1977F Page 9-10
8.	Mixer, Antifoam Lightnin Model NS-1	Lightnin Operating Instruction IT 313N Page 6-7

<b>Table 5 – MANUFACTURERS TROUBLE SHOOTING GUIDES</b>		
<b>ITEM</b>		<b>LOCATION</b>
9.	Belt Filter Press Komeline-Sanderson Model GMR, 1.5 Meter	Komeline-Sanderson Operation and Maintenance Manual Section 1
10.	PDS 360 Open channel Meter	DS 360 Operation Manual
11.	Flow Meter – Effluent Control Electronics	Control Electronics Operation & Maintenance Manual
12.	Honeywell dr4300	Honeywell dr4300 Operation and Maintenance Manual
13.	pH Sensor Hach SC-200	Hach User Manual
14.	pH Sensor Hach SC-200	Hach User Manual
15.	Clarifiers A. Walker Process Equipment B. Dorr-Oliver, Inc. Model S	Complete O&M for the clarifiers are contained in their respective instruction manuals. Troubleshooting typically entails sedimentation process upsets (not mechanical problems). Publications dealing with design and operation of wastewater treatment plants contain process control applications, which assist operators in handling process upsets.

## 9.0 WASTE GENERATION

Dewatered process sludge generated because of the manufacturing process is transported off-Facility by a private third-party company specializing in soil management strategies for agriculture, gravel pit operators, compost operations, landscapers, and municipalities. Prior to collection and transport, sludge is stored at the BMC Facility in a properly lined roll-off container supplied by RMI.

Sludge is collected by RMI on an approximate weekly basis and transported by RMI personnel to the RMI Residuals Management Facility in Holderness, New Hampshire. During calendar year 2019, approximately 105 tons (dry weight) of sludge were transported off-Facility by RMI.

RMI provides BMC with an Annual Report for the Biosolids Program, which states that the sludge transported off-Facility is further processed by RMI into Class A material with respect to pathogens under 40 CFR part 503.32(a)(3), and meets one of the vector attraction reduction requirements of 40 CFR part 503.33(b)(1) through (b)(8).

Upon departure from the BMC Facility, BMC is no longer responsible for the sludge, the precautionary measures taken while in transport and additional treatment and/or application procedures by others.

## **10.0 RECENT FACILITY CHANGES**

### **10.1 SULFURIC ACID RELEASE**

On September 1, 2019, a release of sulfuric acid occurred due to the failure of the former 4,500-gallon stainless steel AST, which was previously located on the eastern portion of the property, immediately southwest of the Screen Building (Building No. 132). The details of this release condition, assessment and remediation can be found in regulatory submittals to MassDEP under Release Tracking Number (RTN) 1-20919 at <https://eeaonline.eea.state.ma.us/portal#!/wastesite/1-0020919>.

As part of assessment monitoring under MassDEP RTN 1-20919, a total of ten soil borings, six of which were completed as monitoring wells were installed at the Site. These borings/wells were installed to evaluate soil and groundwater conditions related to the release. Soil samples were collected in January 2020.

Groundwater samples were collected in February and May 2020. The analytical data will be used to support the eventual completion of the Immediate Response Action (IRA) with MassDEP and the filing of a Permanent Solution under RTN 1-20919.

### **10.1.1 AST REMOVAL**

Between September 30<sup>th</sup> and October 7<sup>th</sup>, 2019, AST removal operations were performed by personnel from Western Mass Environmental (WME). Using coal ash, personnel from WME neutralized the 8-10-inches of sulfuric acid sludge that remained at the bottom of the AST. To make the sludge/coal ash mixture less viscous, a vacuum truck containing approximately 2,000-gallons of clean water was used to remove the sludge mixture from the AST.

Following sludge removal, personnel from WME pressure washed the interior of the AST to remove residual sludge/coal ash. Rinseate that was generated during pressure washing activities was removed from the AST via the vacuum truck.

BMC was able to utilize the on-Facility WWTP aeration basin to dispose of the estimated 2,000 to 2,500-gallons of sulfuric acid sludge, coal ash and water mixture contained in the vacuum truck.

Following tank cleaning operations, personnel from WME and Harold's Garage Inc., returned to the Facility oversee the removal of the AST. Due to the size and weight of the AST, the tank was removed using a crane and rigging. The AST was loaded onto a flatbed and transported off-Facility to Joseph Freedman Co. in Springfield, MA for recycling.

### **10.1.2 DEMOLITION OF CONCRETE CONTAINMENT DIKE**

Between October 22 and 24, 2019, personnel from OEG provided oversight of WME for the neutralization, cleanout, demolition, rebar removal and stockpiling of the former concrete containment dike. All neutralization media and liquid wastes were diluted and pumped into the Facility's WWTP for management.

The concrete debris was broken into suitably sized pieces and stockpiled on, and subsequently covered with poly sheeting pending off-Facility management.

### **10.1.3 FACILITY RESTORATION ACTIVITIES**

On October 29 and October 30, 2019, W.R. Hillman & Sons, Inc. (Hillman), under the supervision of BMC personnel, performed restoration activities around the sulfuric acid release and drainage swale.



Restoration consisted of the placement ½-inch trap rock underlain by a layer of filter fabric. The filter fabric and trap rock will allow for increased infiltration of stormwater into pervious soils and reduce the amount of stormwater runoff entering the Tailrace Brook and North River. The northern and southern banks of the drainage swale were then loamed, seeded and covered with erosion control blankets.

Hillman completed construction of the “L” shaped CMU retaining wall, which ties into the existing landscape retention wall as well as the southern wall of the Screen Building. The 6-inch steel pipe/gate valve was installed in the same location by a third-party contractor

On November 5 and November 7, 2019, Hillman, under the supervision of BMC personnel performed restoration activities in the area immediately southwest of the screen building. The area was re-graded and finished with asphalt paving. Current Facility features, as related to the removal of the former 4,500-gallon sulfuric acid AST and concrete containment dike and subsequent restoration, are presented on [Figure 10](#).

## **10.2 NEW SULFURIC ACID DESIGN**

BMC is currently working with a professional engineer (PE) to design updated sulfuric acid storage, containment, and metering systems for the Bleachery Building (No. 134) and Screen Building, (No. 132), respectively.

The intent of the new designs is to replace the legacy sulfuric acid storage tanks (the former 4,500-gallon stainless steel AST) and provide separate, interior self-contained local storage in both the Bleachery and Screen Buildings. Since the central storage tank has already been removed, the project is limited to upgrading the local storage location systems. The conceptual basis of design for the new sulfuric acid system was prepared by Robert Mitchell Engineering P.C. A copy of the Basis of Design is included in [Appendix G](#).

## **10.3 CHEMICAL CHANGES**

BMC replaced Manawet RCN with Lava Wash in late spring 2020. Lava Wash will perform the same functions as Manawet RCN. Lava Wash is an anionic, phosphate surfactant used to de-size and scour garments. This product is used during the bleaching process to whiten the raw product.

It is used in between the scouring process, which removes the dirt and grease that accumulate in the fibers and the souring processes, which brings the material back to neutral pH.

## **11.0 REPORTING OF BMP INCIDENTS**

The following Section discusses the procedures for reporting incidents related to BMPs at the Facility. A BMP incident is defined as any situation which presents the potential for, or actual discharge of, pollutants to surface waters.

The objective is to identify the appropriate Facility personnel to facilitate cleanup and response actions in the event of a release of OHM, and to identify the applicable federal, state and local agencies regulatory reporting obligations, and to maintain records of BMP incidents.

### **11.1 COMMUNICATIONS**

It is important that supervisory personnel can contact others within the Facility to notify them of the incident. Land lines are situated within various buildings across the Facility. However, the Facility wide BMP is to primarily utilize 2-way radios to communicate with other personnel across the Facility.

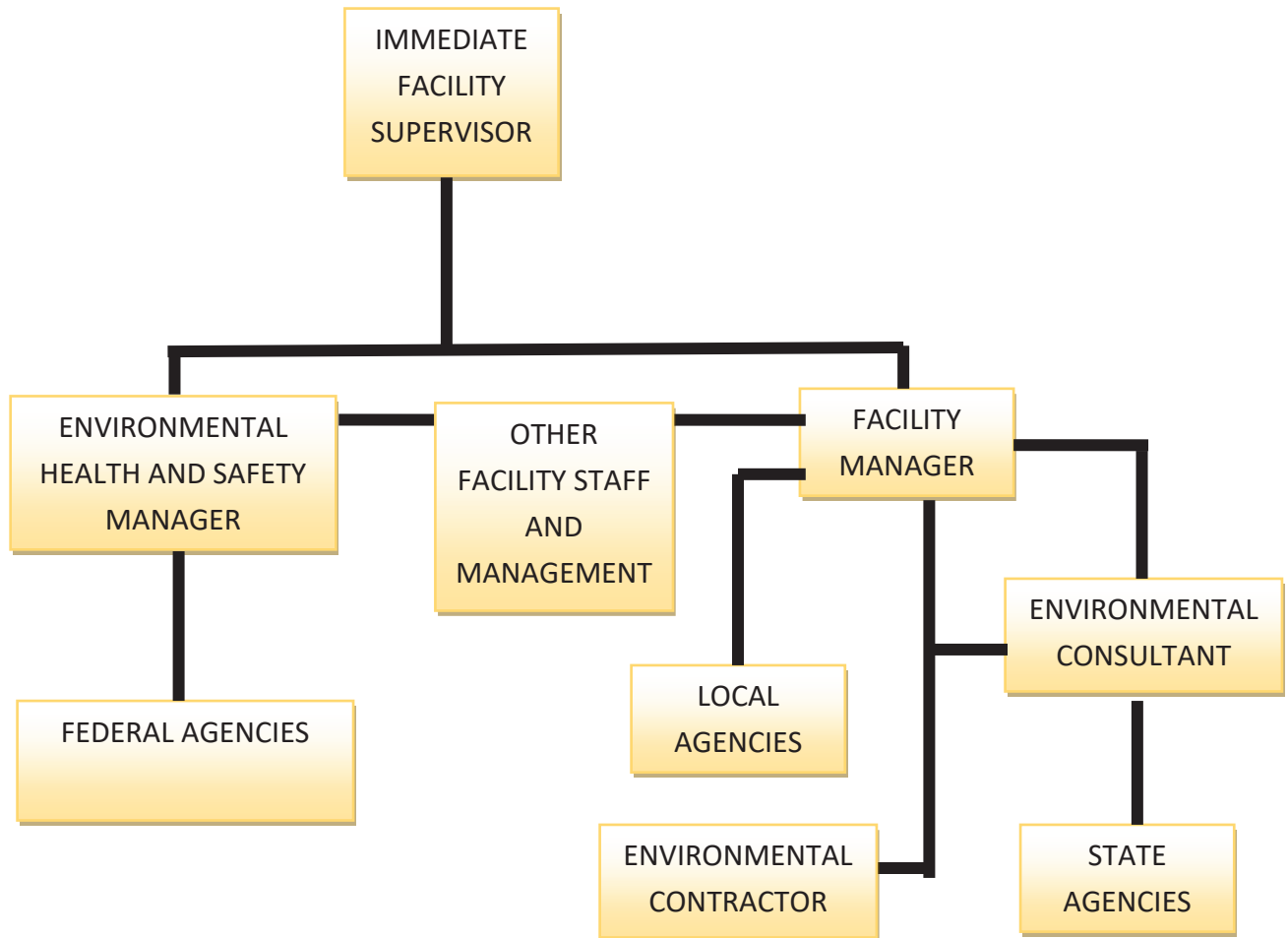
#### **11.1.1 INCIDENT FLOW CHART**

If a BMP incident is observed by BMC personnel, they should notify their supervisor immediately. The supervisor will then notify the Environmental Health and Safety (EHS) Officer and the Facilities Manager. The Facility Manager will then notify the appropriate local agencies such as the Fire Department, Emergency Medical Services (EMS), and the local Health Department (if/as applicable).

The Facilities Manager will also notify the Environmental Consultant, who will notify the Massachusetts Department of Environmental Protection (MassDEP) if the Licensed Site Professional (LSP) determines the release equals or exceeds a Reportable Quantity (RQ) or is deemed a Reportable Condition (RC) under the Massachusetts Contingency Plan (MCP). The EHS Manager is responsible to notify any federal agencies, including but not limited to USEPA if/as applicable. Refer to the decision tree below, which indicates the chain of command should a BMP incident occur.

**ORGIZATIONAL CHART  
BMP INCIDENT CHAIN OF COMMAND**

**BARNHARDT MANUFACTURING CO.  
237 MAIN ROAD  
COLRAIN, MA 01340**



### **11.1.2 CONTACT INFO BY DESIGNATED FACILITY AREA**

The following BMP areas listed below were determined by the BMP Committee to pose the greatest potential for releases of OHM to impact the surface waters. The supervisor in charge of each area of the Facility are presented below.

#### **Bleachery Building (#134)**

Mark Thibodeau – Facilities Manager

Phone: 413-624-3471 x3720

Off Hours: 413-624-3232

[mark.thibodeau@barnhardt.net](mailto:mark.thibodeau@barnhardt.net)

#### **Boiler House (#117) and Bulk Storage Areas**

Mark Thibodeau – Facilities Manager

Phone: 413-624-3471 x3720

Off Hours: 413-624-3232

[mark.thibodeau@barnhardt.net](mailto:mark.thibodeau@barnhardt.net)

#### **Maintenance Shop and Raw Cotton Handling Area (#118)**

Mark Thibodeau – Facilities Manager

Phone: 413-624-3471 x3720

Off Hours: 413-624-3232

[mark.thibodeau@barnhardt.net](mailto:mark.thibodeau@barnhardt.net)

#### **WWTP Buildings (#133 and others)**

Keith Gammell – WWTP Operator

Phone: 413-624-3471 x3722

Off Hours: 412-625-2381

[keith.gammell@barnhardt.net](mailto:keith.gammell@barnhardt.net)

#### **Screen Building (#132)**

Keith Gammell – WWTP Operator

Phone: 413-624-3471 x3722

Off Hours: 412-625-2381

[keith.gammell@barnhardt.net](mailto:keith.gammell@barnhardt.net)

### **Facility Wide**

Mark Thibodeau – Facilities Manager

Phone: 413-624-3471 x3720

Off Hours: 413-624-3232

[mark.thibodeau@barnhardt.net](mailto:mark.thibodeau@barnhardt.net)

### **EHS**

Timothy Mosher - Environmental Health and Safety Manager

Phone: 413-624-3471 x3701

Off Hours: 413-768-0812

[tim.mosher@barnhardt.net](mailto:tim.mosher@barnhardt.net)

## **11.1.3 REPORTING AND RECORD KEEPING**

All spills of oil and/or hazardous materials, discharges of pollutants, or threat of release conditions will be recorded by the appropriate Facility supervisor. In the event of a release or threat of release condition, a Spill Incident Report Form will be completed by the supervisor.

The Spill Incident Report Form will make note of the following pertinent information:

- Date and time the release or threat of release occurred;
- Circumstances related to the incident, including weather and Facility information
- Type and volume of OHM released;
- Chemical/physical nature of the OHM;
- Duration or volume of OHM released;
- Actions taken to mitigate or remediate the release; and
- Recommendations to reduce potential future releases.

A BMC Spill Incident Report Form is presented in [Appendix H](#). Copies of the completed Release Notification Reports will be provided by the supervisors to the BMP Committee for review and discussion regarding steps to be taken to minimize potential for future BMP incidents. The Spill Incident Report Forms will be maintained at the Facility for a minimum of five (5) years.

## **12.0 DETERMINING MATERIALS COMPATIBILITY**

The following Section discusses the relative compatibility of various OHM that may be stored or otherwise used at the Facility. The three main factors considered in this Section are the compatibility of OHM, construction/type of the storage containers, compatibility of different chemicals when mixed in a container, and compatibility of the container in the environment. As determined by the BMP Committee, the areas below pose the greatest risk of release.

### **12.1 BLEACHERY (BUILDING 134)**

The Bleachery Building contains indoor storage tanks for Acetic Acid, Sodium Hydroxide, surfactant, chelator, sodium bisulfite and sulfuric acid. As the tanks are stored indoors, impacts or degradation of the tanks by environmental conditions, such as precipitation, freezing temperatures, and other factors is unlikely. The tanks are composed of non-reactive stainless steel or plastic. The tanks are filled at an outdoor unloading area on the northwest corner of the Bleachery (Building 134). The chemical delivery personnel verify there are no leaks in the connections upon start of transfer, and the transfer operations are monitored by the drivers, as well as by a surveillance camera which displays in the boiler operator's office and is manned by Barnhardt personnel. The impervious surface beneath the unloading ports is sloped towards catch basin CB-2 which drains to the WWTP. All trucks are equipped with spill kits for minor spills. Refer to [Figure 3](#) to view the location of the unloading area and location of CB-2.

### **12.2 BOILER HOUSE (BUILDING 117) & BULK STORAGE AREAS**

The Boiler House and Bulk Fuel Storage Areas are used for transfer operations for No. 2 fuel oil. These areas are monitored by the drivers, as well as by a surveillance camera which displays in the boiler operator's office and is manned during deliveries. The impervious surface beneath the unloading ports is sloped toward CB-1 which is closed during transfer operations. The trench drain is routed to the WWTP, such that, releases of oil would be collected within the WWTP, where it can be removed prior to discharge to the surface water of the North River. All trucks are equipped with spill kits for minor spills. Storage of bulk fuel is in four 20,000-gallon capacity, double-walled steel, aboveground storage tanks (ASTs) which are inspected monthly.

Records of the monthly inspections are maintained at the Facility in the operator's office. An annual AST inspection is performed by others specializing in tank inspection and permitting activities. Refer to [Figure 6](#) to view the location of the Boiler House and Bulk Fuel Storage Areas.

### **12.3 MAINTENANCE SHOP & RAW COTTON HANDLING (BUILDING 118)**

As shown on [Figure 3](#) Maintenance on leased fork trucks and scissor lifts is occasionally performed by contract personnel in the area between Building 117 and 118. As part of the Facility BMP, this location minimizes the distance between the work being performed and the waste oil storage area.

This area also provides protection in the event of spills from the spill kit maintained in the area as well as the trench drains designed to capture any oily runoff and route it to the WWTP. As part of Facility BMP, this type work will be avoided during a rain event to reduce potential for oily run-off from migrating into the WWTP.

The waste oil storage area is located outside of the maintenance shop in a waterproof plastic enclosure which also acts as a secondary containment. One 55-gallon steel drum of waste oil is stored in the cabinet and is kept closed unless oil is being transferred into it from 5-gallon pails. As a Facility BMP, transfer of waste oil occurs only within the footprint of the secondary containment. The storage is inspected on a routine basis under the SPCC and the inspection reports maintained on site. The collected waste oil is picked up by the Town of Colrain Department of Transportation (DOT) truck and used in their waste oil fired furnace.

### **12.4 WASTEWATER TREATMENT PLANT (BUILDING 133 AND OTHERS)**

All activities involving delivery of chemicals into the aeration basin or clarifiers take place within the WWTP. In general, all manual transfer activities are conducted entirely over areas which are included in the WWTP process, i.e. grated catwalks over treatment system components.

Facility BMP is to not store acids with bases or other flammable or organic materials, and to practice good housekeeping during shipping and receiving operations. Additionally, materials are stored inside various WWTP buildings and storage areas, such that, they are not exposed to the weather.

The WWTP maintains an inventory of chemicals and additives for use in the WWTP treatment operations and process controls, including flocculation, clarification, filtration, disinfection and control of biological growths, corrosion, and scale in water pipes.

Documentation includes the following:

- A list of product names, chemical formulas and/or manufacture of additives;
- Purpose/use of the chemical/additive;
- Safety Data Sheets (SDSs) for these materials, including CAS#;
- Frequency of use and method of application; and
- Vendors reported toxicity information (NOAEL and/or LC50, as available).

Many chemical applications at the WWTP occur using metered pumps designed to discharge specific volumes of chemicals. Facility BMP requires periodic inspection and maintenance of the pumps. Any release or BMP incident that occurs within the WWTP is likely to be entirely contained within the WWTP as all grated catwalks and drains lead into the WWTP. A periodic inspection and inventory of the ASTs and chemical storage areas is required by trained Facility personnel. Records of the inspections and inventory are maintained in the WWTP office. The WWTP Area is depicted on [Figure 8](#). Copies of SDS are also maintained at the Facility. Copies are provided in [Appendix D](#).

## **12.5 SCREEN BUILDING (BUILDING 132)**

The Screen Building stores an interior 1,000-gallon stainless steel AST containing sodium hydroxide and one 55-gallon drum containing sulfuric acid. The 55-gallon drum is used as temporary storage and includes the use of a suitably sized secondary containment (e.g. “spill pallet” or similar) until such time that approved PE designed systems can be implemented. Filling of the sodium hydroxide tank is an activity which can result in release of OHM. Constant surveillance by the driver and closed-circuit camera coverage of activity, monitored by the Facility Manager, is meant to mitigate any leakage which may occur during transfer. A Facility BMP includes monthly inspections of the AST system. Documentation of the inspections and maintenance logs and SDS Sheets are maintained in the WWTP office. The Screen Building is depicted on [Figure 9](#).

## **12.6 PARKING AREAS, GROUNDS & DRIVEWAYS**

Normal building and grounds maintenance activities include snow plowing, de-icing, maintenance of the stormwater collection and conveyance system, maintenance and repair of electrical and mechanical systems, and general housekeeping. Various chemical products, including paints, cleaners, oils, salts, and greases may be used during these operations.



In addition, transporting of 55-gallon drums of chemicals via fork truck from one building to another does occur. A comprehensive list identifying oil and hazardous materials utilized at the Facility is provided in [Appendix C](#).

No sand is stored on the Facility; however, it is applied during winter storms and icy conditions by an outside contractor. As part of the Facility BMP, every spring, a contractor sweeps the paved portions of the Facility and the resulting sand is removed from the premises. The drains and catch basins are inspected monthly in accordance with the SWPP.

### 13.0 GOOD HOUSE KEEPING PRACTICES

Good housekeeping is an extremely important management practice to reduce the potential for pollutants to enter the surface water of the North River. Poor housekeeping can result in potential pollutants being carelessly released and discarded. A clean and orderly work area not only reduces safety hazards to plant personnel, it also reduces the possibility of accidental spills caused by mishandling of chemicals, materials, and equipment, thereby increasing the potential for impact to surface water. Well-maintained and properly managed material storage areas also reduce the possibility of releases of OHM. Good housekeeping BMPs that are implemented at high-risk areas of the Facility are recognized by the BMP Committee and are summarized below in [Table 6](#).

**Table 6 – HOUSEKEEPING**

Document No.	Description
01	Inspect and maintain building foundations and integral berms
02	Inspect secondary containment areas, piping, and valves
03	Pump out or drain stormwater from secondary containments within 24 hours of a storm event
04	Routinely inspect vehicles for leaks and/or conditions that could lead to the discharge of contaminants to the storm water system
05	Maintenance of catch basins includes: 1) keeping catch basin grates free from vegetative and debris accumulation, and 2) monitoring sediment accumulation during monthly inspections and removal of excess sediment. Excess sediment is defined as sediment at a level that is more than 2/3 the sump depth or less than 6" below the invert of outlet pipe

<b>Table 6 – HOUSEKEEPING (Cont.)</b>	
06	Continuously collect all waste, debris, and trash generated at the Facility, especially those which are potentially exposed to storm water, and dispose of in appropriate receptacle
07	Do not use salt for ice melt
08	Store and handle all materials for snow and ice melt in a manner which will minimize potential for runoff. This includes but is not limited to, storing unopened bags of ice melt materials off the ground to allow for more comprehensive inspection
09	Yearly spring sweeping of and removal of sediment from, the paved areas of the site controls the amount of sand from winter sanding activities which enter the stormwater system during spring rains
10	Maintain reasonably clean paved surfaces by using brooms, shovels, vacuum cleaners, or other cleaning equipment
11	External cotton conveyances are regularly maintained to prevent discharge of cotton particles that can be caught up in stormwater runoff
12	Fabrication is performed indoors and away from doorways, whenever possible
13	Buckets are placed under truck and building hose connections during chemical unloading to capture any leakage
14	Do not use running water to wash down areas or equipment that do not drain to the WWTP
15	Empty drums and containers stored in contact with stormwater shall be triple rinsed in one of the two designated areas for outdoor washing or maintenance
16	Store all containers, drums, and bags away from direct traffic routes to prevent collisions resulting in accidental spills
17	All containerized materials are plainly labeled and stored indoors away from drains and doors, in the Chemical Storage Area
18	All storage tanks shall be stenciled with the product stored and tank capacity in large enough letters to be easily read
19	Stack containers according to manufacturer's instructions to avoid damaging the containers from improper weight distribution
20	Store containers on pallets or similar devices to prevent corrosion, which can result when containers meet the ground

A critical part of the monthly inspections and maintenance activities that are performed by Facility personnel, is record keeping and communication between the personnel conducting the inspection and the Facilities Manager. Facility BMP includes preparing duplicate copies (one electronic copy) of the maintenance and inspection logs and providing them to the Facility Manager in a timely manner. Copies of all documentation is maintained at the Facility Manager's office. All major repairs or maintenance performed by outside contractors is performed under the direct supervision of Facility personnel.

Spill-kits, which are located throughout the Facility, shall be maintained such that, used materials are promptly replaced, and the use of spill kits to abate an incident is thoroughly documented. Copies of BMP Incident Reports are provided to the Facilities Manager so that they can be evaluated by the BMP Committee to determine if the current procedures were adequate and how to improve Good-Housekeeping measures in the future.

#### **14.0 INSPECTIONS AND RECORD KEEPING**

The following documentation shall be maintained by the Facility in an orderly and accessible manner within the Facility Main Office and other salient Facility locations as part of this BMP, and periodically evaluated and updated, as follows:

- Records of operational and preventative maintenance activities, equipment inspections, procedural audits, and personnel training activities; and
- Documentation of BMP Plan activities shall be kept at the Facility and provided to EPA and/or MassDEP upon such request.

#### **14.1 RECORDS, INSPECTIONS & MAINTENANCE BY BMP AREA**

Facility personnel who oversee the high-risk areas identified by the BMP Committee also have specific inspections and record keeping responsibilities that differ across the Facility. These responsibilities are discussed in detail below.

##### **14.1.1 BLEACHERY BUILDING (#134)**

As the Bleachery Building contains indoor storage tanks for Acetic Acid, Sodium Hydroxide, surfactant, chelator, and sodium bisulfite, routine maintenance includes testing the function of high and low-level alarms, pumps, transfer mechanisms, and integrity of the various vessels and associated piping.

The routine inspectional information should be maintained near the vessels in a visible location. As part of the BMP, any potential concerns or maintenance issues should be brought to the immediate attention of the Facilities Manager. Documentation of the inspections and maintenance should be retained in the Main Office.

#### **14.1.2 BOILER HOUSE (#117) & BULK STORAGE AREAS**

The Boiler House and Bulk Fuel Storage areas have specific inspectional and record keeping obligations, which includes keeping accurate shipping and receiving logs and inventories of the materials used in production, or for power/steam generation. This information should be maintained to reconcile material usage vs loss in the event of a spill. The records are to remain on file at the Facility's Main Office.

As part of the BMP, the impervious surface beneath the unloading ports should be periodically inspected for significant cracks or voids. Catch basin CB-1, which is normally closed during transfer operations, should be routinely inspected, and tested for functionality. The trench drain that is routed to the WWTP should be routinely inspected and kept free and clear of debris. Additionally, the video monitoring equipment should be checked to ensure proper working order.

Any potential concerns or maintenance issues within the area subject to the BMPs should be brought to the immediate attention of the Facilities Manager. Documentation of the inspections and maintenance should be retained in the Main Office.

#### **14.1.3 MAINTENANCE SHOP & RAW COTTON HANDLING (#118)**

The Maintenance Shop and Raw Cotton Handling area have specific BMPs relating to the handling of both virgin and waste oils, as well as other chemicals utilized in the maintenance and daily operation of the Facility. This includes maintaining inventories or quantities/volumes of OHM used in the Maintenance Shop, including copies of the SDS for each chemical.

Records of all Uniform Hazardous Waste Manifests, Bills of Lading, and Material Shipping Record Logs used for transporting OHM from the Facility for off-Facility disposal/recycling should be maintained in the Facility's Main Office. Routine inspections of the hazardous waste accumulation areas, including the waste oil storage area, should be performed, and managed as part of the good housekeeping practices discussed herein.

Service records should be maintained for all hydraulic equipment such as forklifts or scissor lifts, including the date when they were last inspected, or when maintenance was last performed. Hydraulic hoses and fuel tanks should be inspected by trained mechanics, as failure of hydraulic lines can result in the releases of OHM.

Any potential concerns or maintenance issues within the area subject to the BMPs should be brought to the immediate attention of the Facilities Manager. Documentation of the inspections and maintenance should be retained in the Main Office.

#### **14.1.4 WWTP BUILDINGS & SCREEN BUILDING (#133 AND 132)**

The Facility BMP includes routine maintenance such as the periodic testing of the function of high and low-level alarms, pumps, transfer mechanisms, and integrity of the various vessels and associated piping at the WWTP. Records of all inspections and Maintenance activities are maintained in the WWTP Office. The WWTP Office also maintains copies of chemical inventories, SDS sheets, and other pertinent documentation.

As the WWTP utilizes an in-Facility laboratory for some media testing, and as samples are frequently submitted to contract laboratories for analysis, organizing and maintaining copies of laboratory analytical reports is critical to the day to day operations of the WWTP.

Documentation of the collection and analysis of samples, including, but not limited to, sample location, any calculations done at the time of sampling, any sampling or analytical methods used for samples analyzed at the Facility, and outside sample results shall be maintained. When analytical results prompt or result in modifications to the System Operations or Maintenance procedures they should be thoroughly documented, including the process changes.

Potential concerns or maintenance issues should be brought to the immediate attention of the WWTP Operator. Documentation of the inspections and maintenance logs should be retained in the WWTP Office. Facility specific details pertaining to the Operation and Maintenance of the WWTP and Facility specific BMPs are discussed in detail in the Operation and Maintenance Manual (OMM), a copy of which is on file at the WWTP.

The OMM which provides for the operation and maintenance control measures that are implemented at the Facility to meet the effluent limitations as stated in the NPDES Permit.

The control measures describe in detail the pollution control measures employed at the Facility and the methods of operation aimed at treating and discharging of the treated process water including:

- Operation and control of wastewater treatment;
- Operation and control of sludge handling;
- Operation and control of testing of chemical additions and monitoring systems;
- Personnel;
- Sampling and laboratory analysis;
- Emergency operations, response and reporting;
- Safety practices; and
- Energy and utility requirements.

## **15.0 EMPLOYEE TRAINING**

The Environmental Health and Safety Manager is responsible for coordinating the training of Facility personnel per the BMP. To the extent practical, the training shall be conducted annually and may be combined with other environmental, health, or safety training. Please refer to the SPCC (Personnel Training for Discharge Prevention Procedures) and the SWPPP (Employee Training) for specific training requirements under these documents. Copies of the training records are to be maintained in the personnel files at the Main Office.

At the beginning of each shift, shift leads will remind employees of good housekeeping practices and address any identified deficiencies at the Facility. At a minimum, the topics below shall be covered during BMP training sessions:

- The requirements of the Facility-specific NPDES Permit;
- The purpose of the BMP and its content;
- The individual responsibilities of Facility personnel for complying with the requirements of the NPDES Permit and goals and objectives of the BMP Plan;
- The location of storm water drainage structures and receiving waters of the storm water system to emphasize the importance of keeping pollutants out of the storm drain;
- Potential pollutants that could directly impact adjacent properties or nearby water resources;
- Spill prevention and response procedures;

- Good housekeeping practices;
- Solvents management;
- Proper handling and disposal of petroleum products and spent lubricants;
- Proper handling, usage, and disposal of process chemicals;
- Requirements for BMP Amendments and annual review process;
- The BMP Incident Chain of Command; and
- The BMP notification, reporting and recordkeeping requirements.

The Environmental Health and Safety Manager is required to provide adequate training for newly hired employees, and to ensure that any changes in Facility personnel, staffing, and job responsibilities in the areas subject to the Facility BMPs. Copies of trainings, certifications, and licenses shall be maintained in the Personnel files in the Main Office.

## **16.0 FACILITY SECURITY**

The Facility relies on several layers of security including video surveillance cameras, Facility personnel, security lighting, and fencing. Additionally, the various automated systems are equipped with alarms and other telemetry devices to notify operators when key systems are down. These security systems must be maintained under the BMP across all Facility areas and should be tested routinely. Copies of the testing documentation are maintained in the Main Office. If repairs or modifications to the security systems are necessary, that information should be brought to the immediate attention of the Facility Manager. The personnel listed in the [Table 1](#) are available on off-hours and should be notified immediately if there is an incident.

## **17.0 REFERENCES**

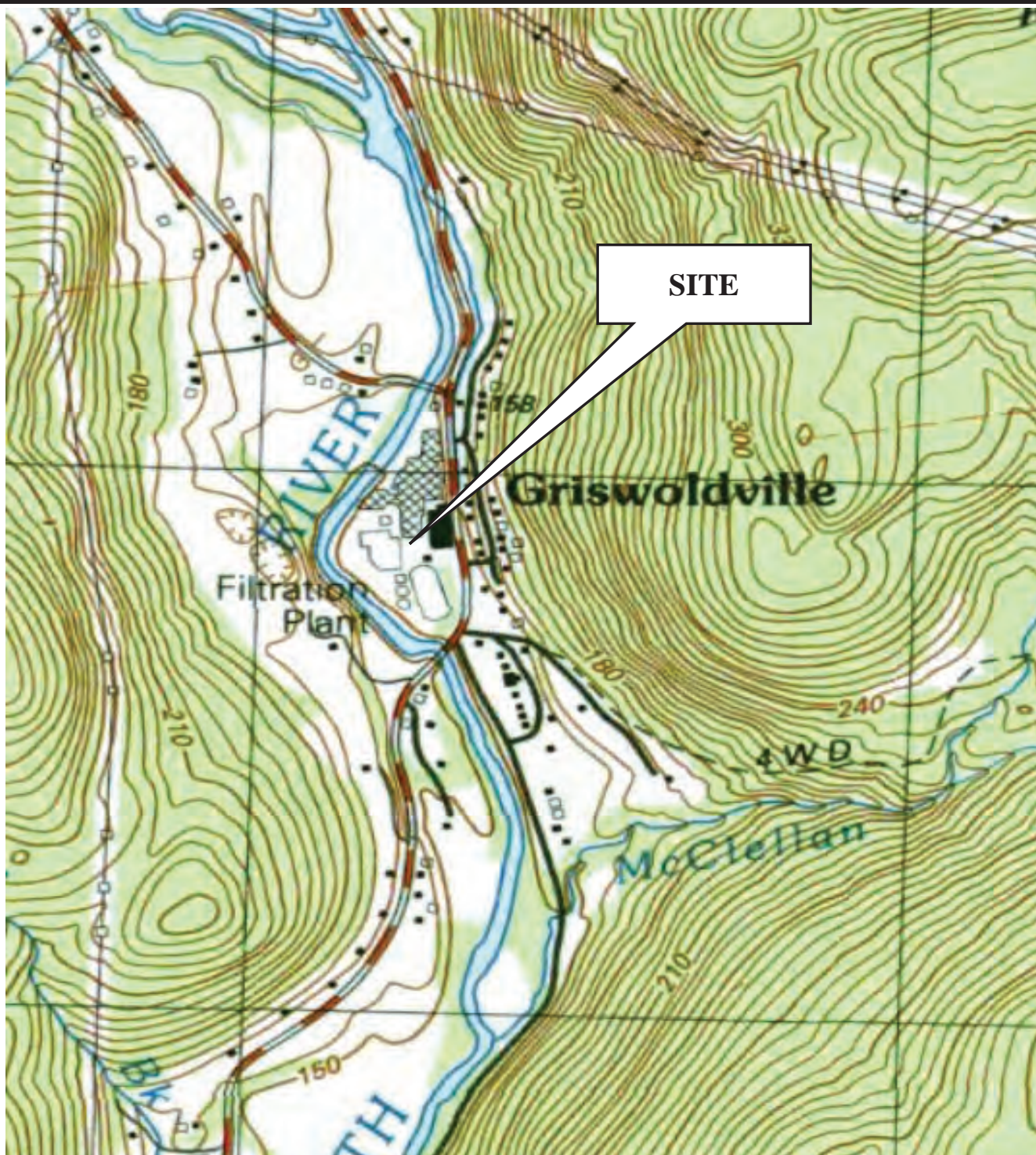
*NPDES Best Management Practices, Guidance Document, June 1981, USEPA Office of Water Enforcement and Permits, NPDES Technical Support Branch*

*Storm Water Pollution Prevention Plan, Barnhardt Manufacturing Company, amended November 2015, 247 Main Road, Colrain, MA*

*Operation and Maintenance Manual, Barnhardt Manufacturing Company, September 2018, 247 Main Road, Colrain, MA*

## FIGURES



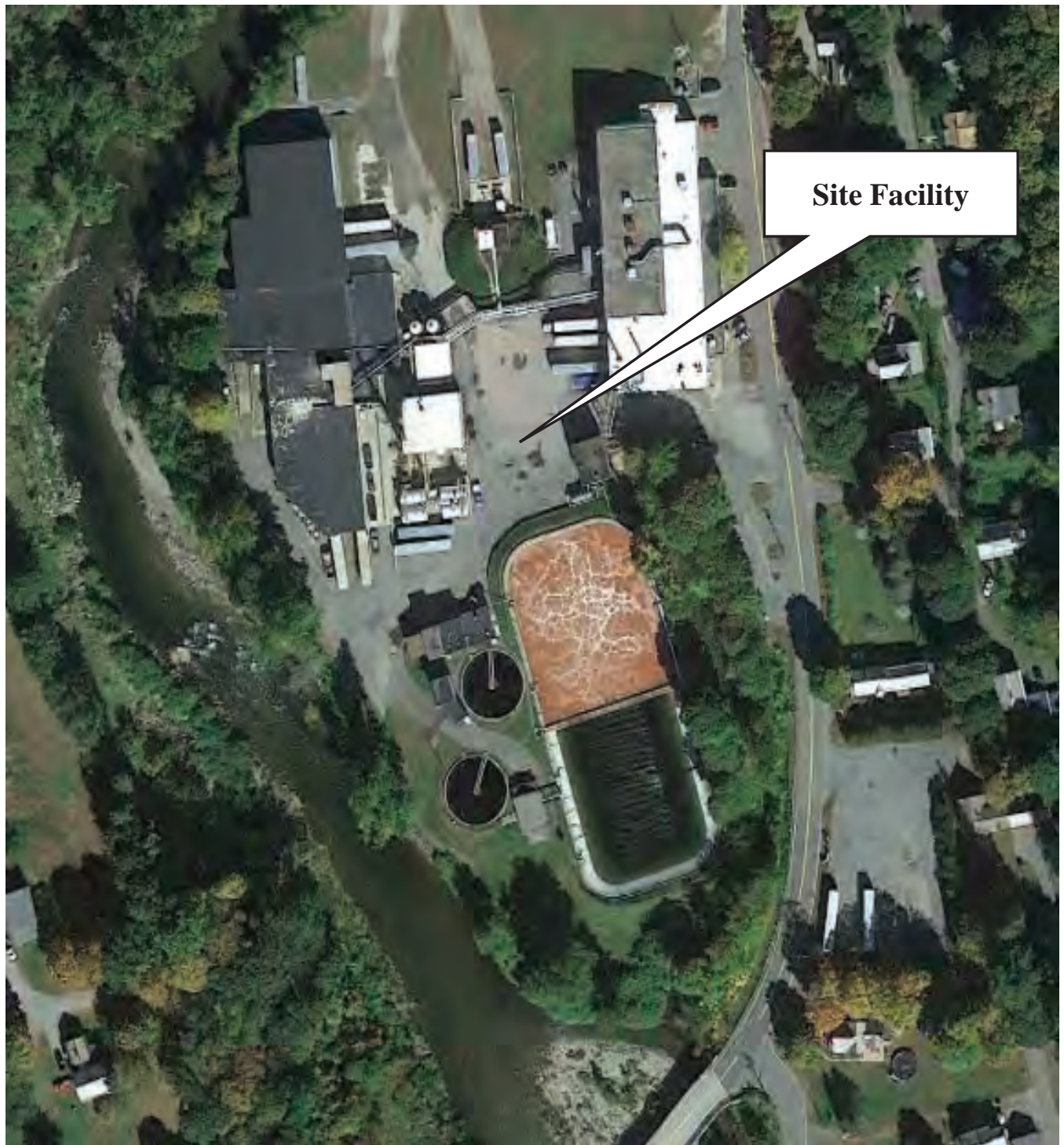


**Barnhardt Manufacturing**  
**247 Main Road**  
**Colrain, Massachusetts**



**FIGURE 1 –LOCUS MAP**

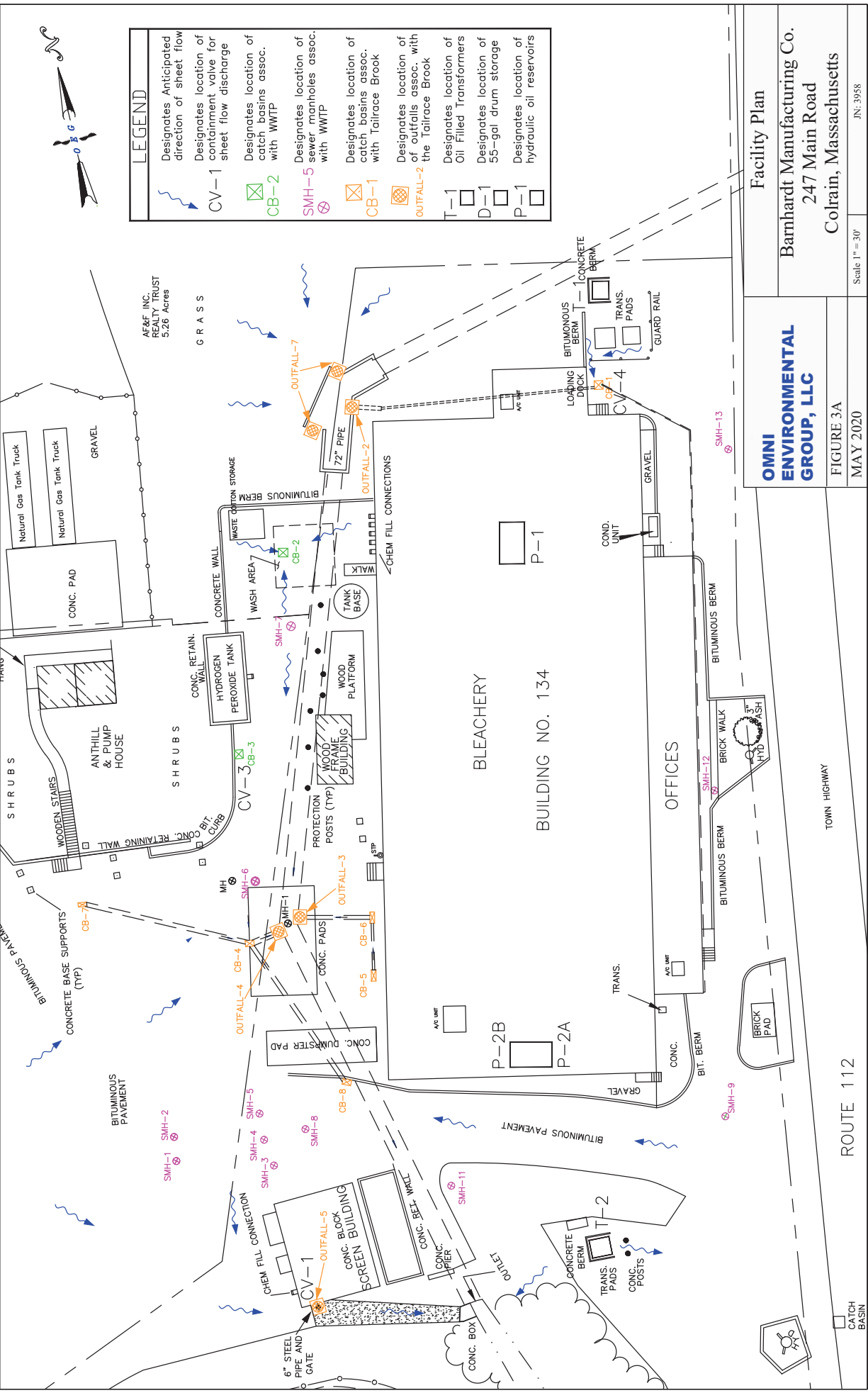




**Barnhardt Manufacturing**  
**247 Main Road**  
**Colrain, Massachusetts**



**FIGURE 3 – AERIAL VIEW OF THE SUBJECT SITE**



LEGEND	
	Designates Anticipated direction of sheet flow
	Designates location of containment valve for sheet flow discharge
	Designates location of catch basins assoc. with WWTP
	Designates location of sewer manholes assoc. with WWTP
	Designates location of catch basins assoc. with Tailrace Brook
	Designates location of outfalls assoc. with the Tailrace Brook
	Designates location of Oil Filled Transformers
	Designates location of 55-gal drum storage
	Designates location of hydraulic oil reservoirs

**OMNI ENVIRONMENTAL GROUP, LLC**

FIGURE 3A

MAY 2020

**Facility Plan**

Barnhardt Manufacturing Co.

247 Main Road

Colrain, Massachusetts

Scale 1" = 30'

JN: 3958

ROUTE 112

TOWN HIGHWAY

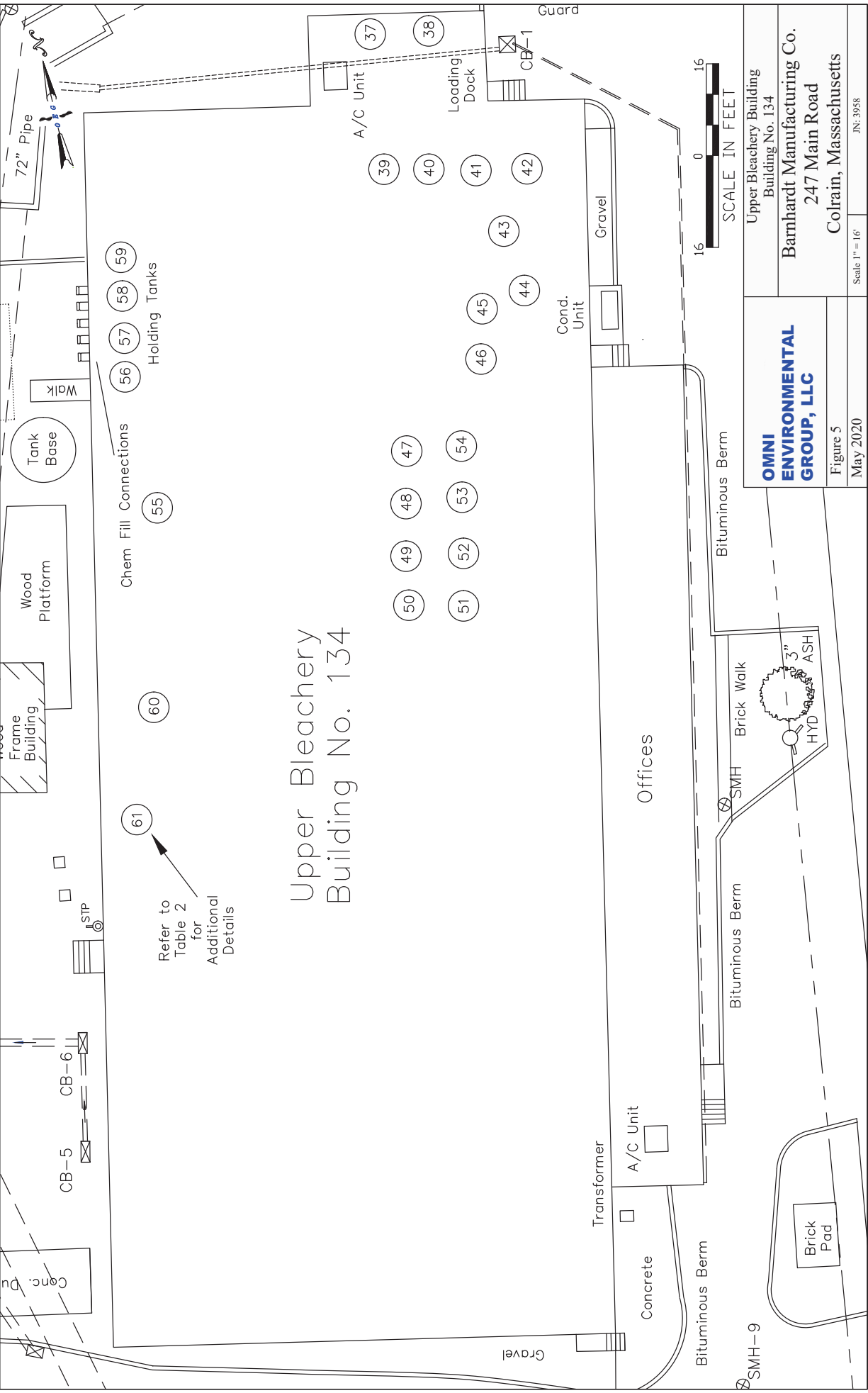


CATCH BASIN



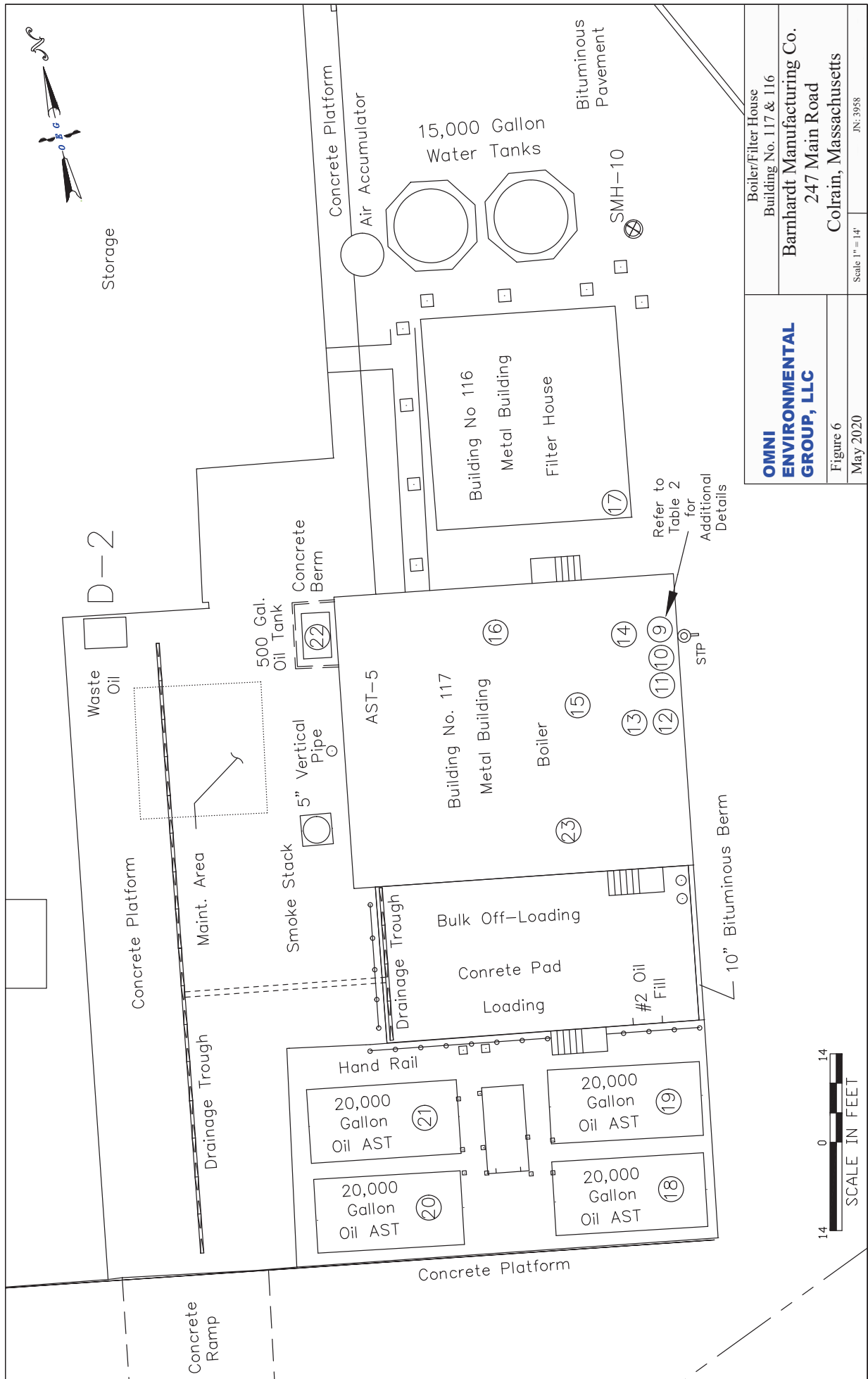






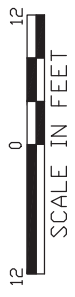
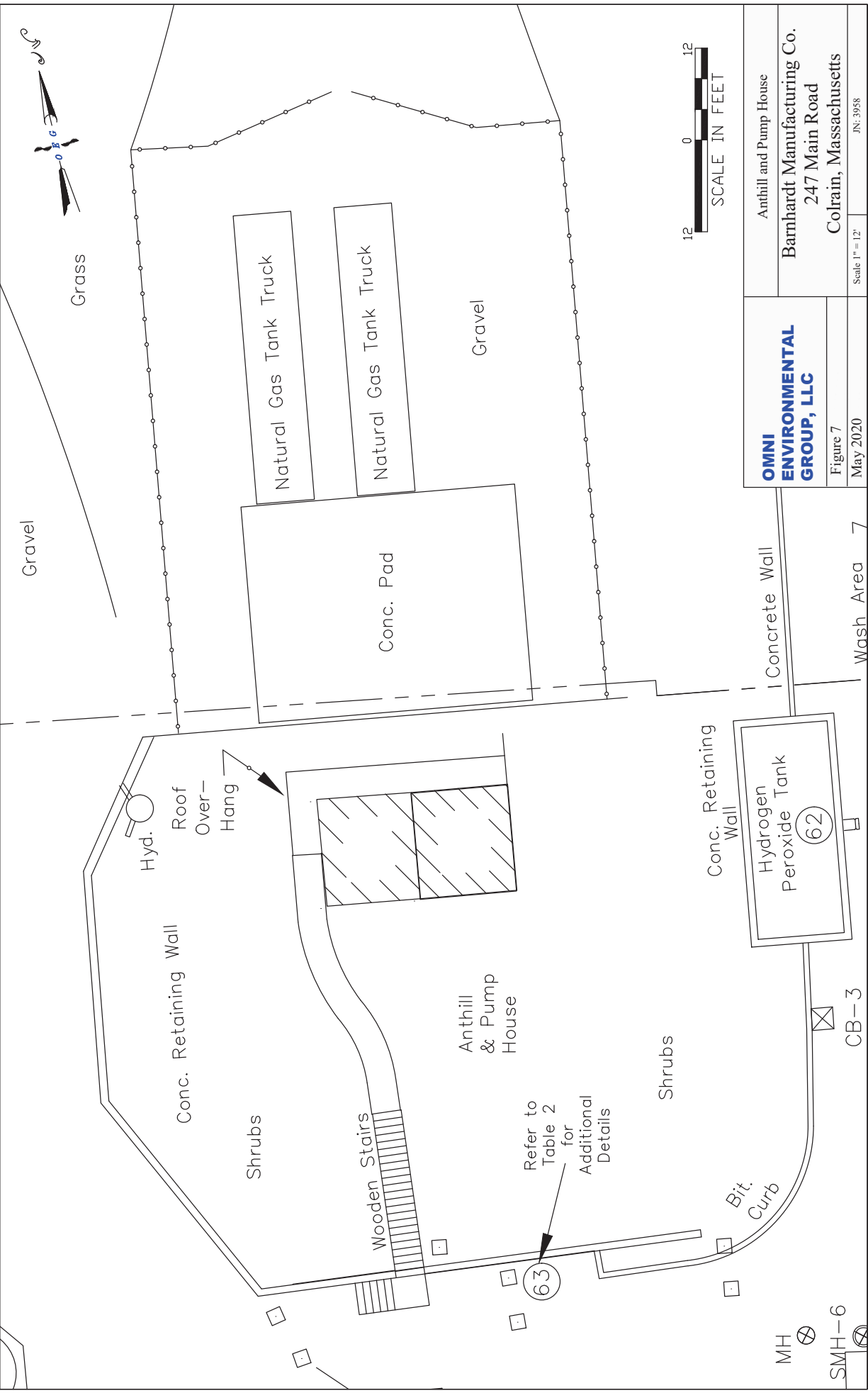
Upper Bleachery  
Building No. 134

<b>OMNI ENVIRONMENTAL GROUP, LLC</b>	Upper Bleachery Building Building No. 134
	Barnhardt Manufacturing Co. 247 Main Road Colrain, Massachusetts
Figure 5 May 2020	Scale 1" = 16' JN: 3958



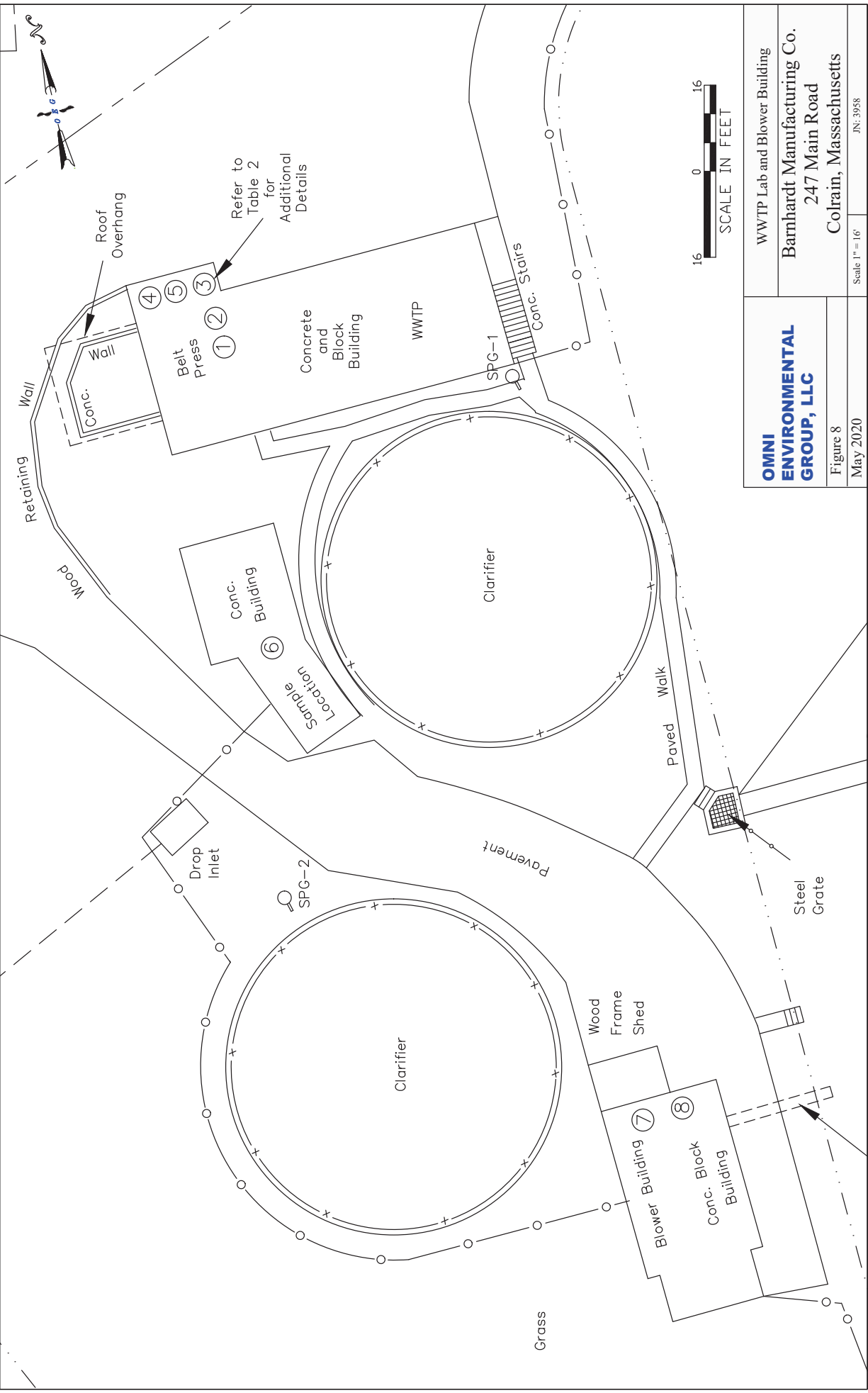
<b>OMNI ENVIRONMENTAL GROUP, LLC</b>	Boiler/Filter House Building No. 117 & 116
	Barnhardt Manufacturing Co. 247 Main Road Colrain, Massachusetts
Figure 6	Scale 1" = 14'
May 2020	JN: 3958

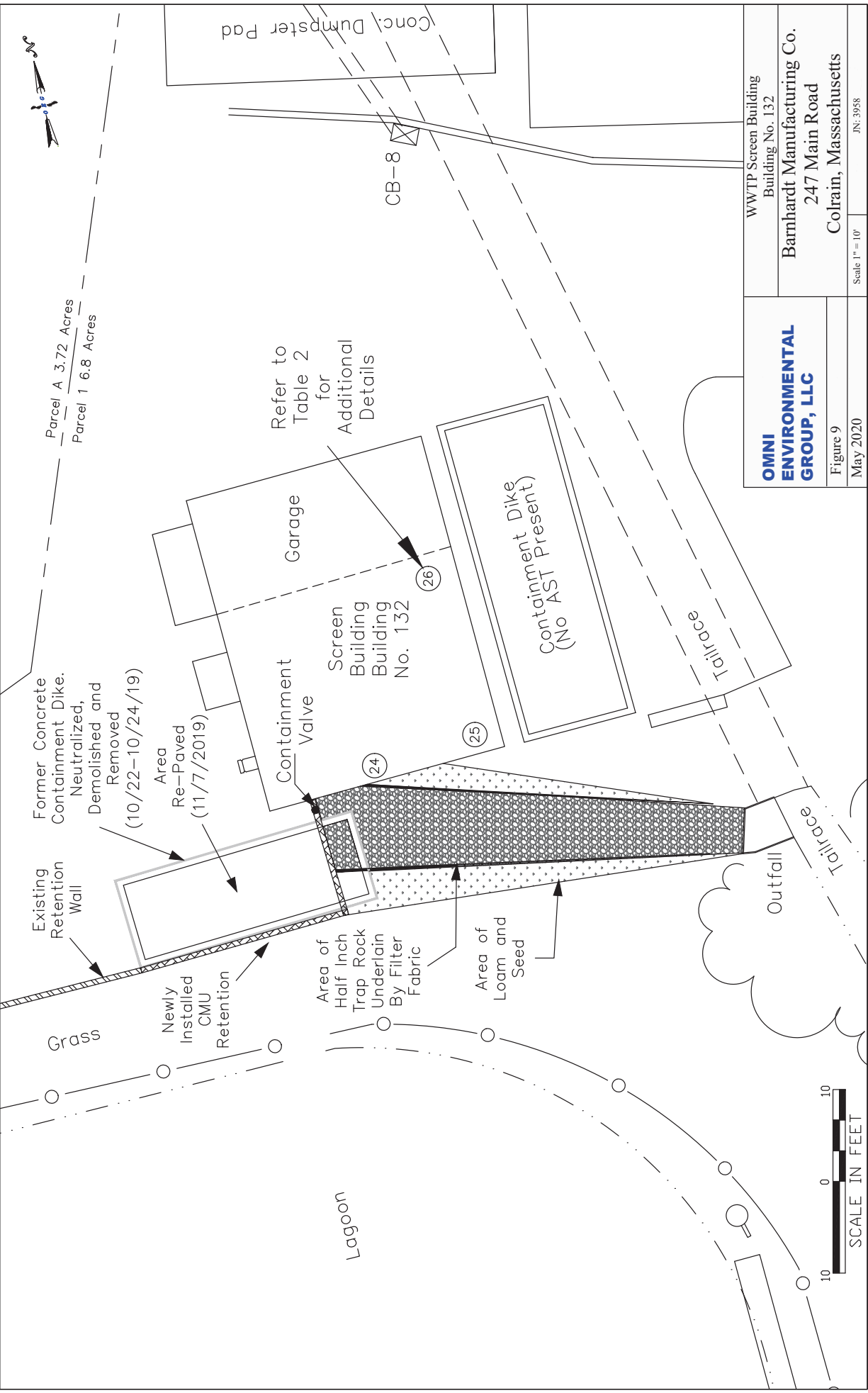




<b>OMNI ENVIRONMENTAL GROUP, LLC</b>	Anthill and Pump House
	Barnhardt Manufacturing Co. 247 Main Road Colrain, Massachusetts
Figure 7	Scale 1" = 12'
May 2020	JN: 3958

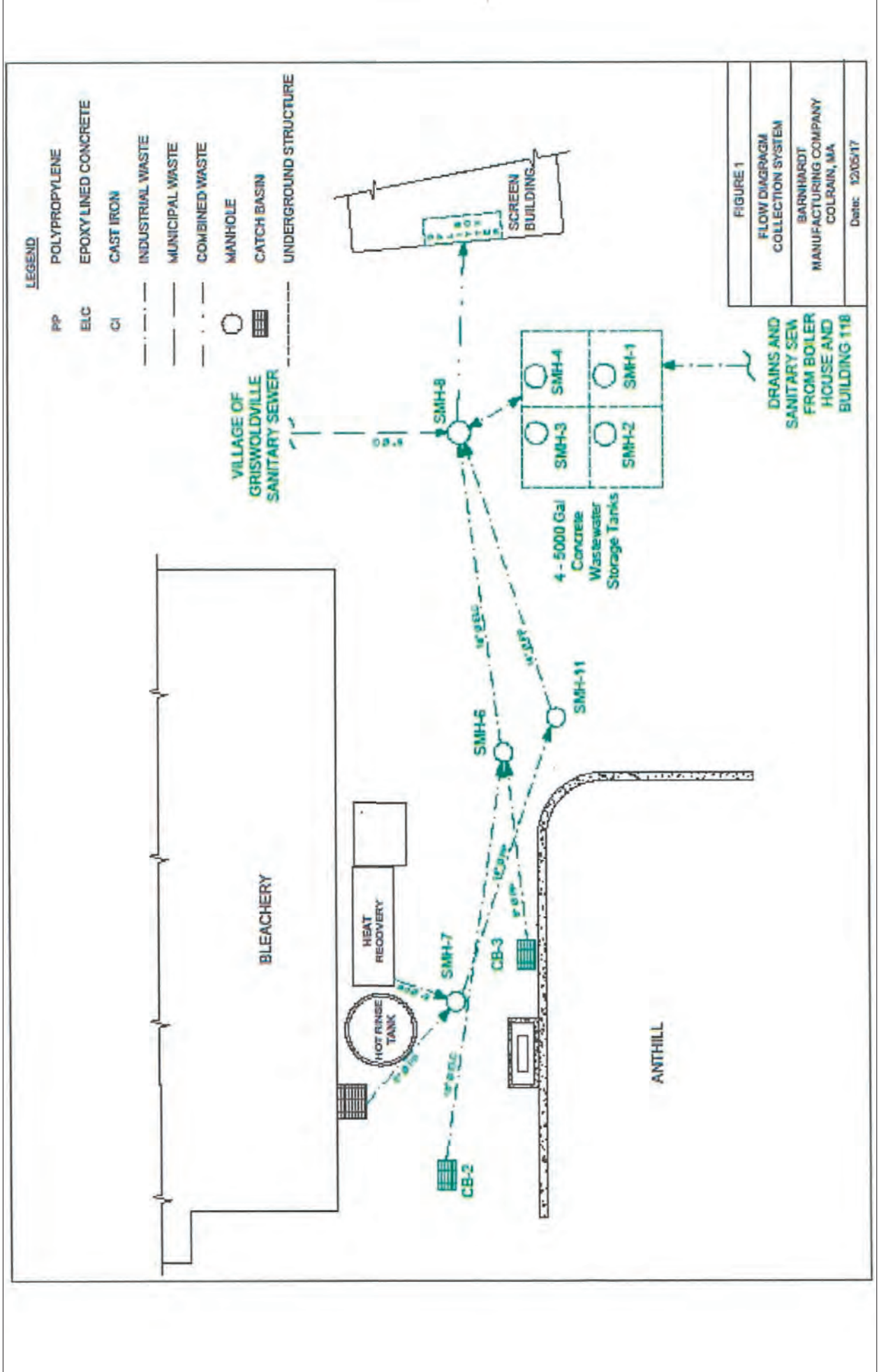






<b>OMNI ENVIRONMENTAL GROUP, LLC</b>	WWTP Screen Building Building No. 132
	Barnhardt Manufacturing Co. 247 Main Road Colrain, Massachusetts
Figure 9	Scale 1" = 10'
May 2020	JN: 3958

**APPENDIX A**  
**PROCESS FLOW SCHEMATICS & DIAGRAMS**

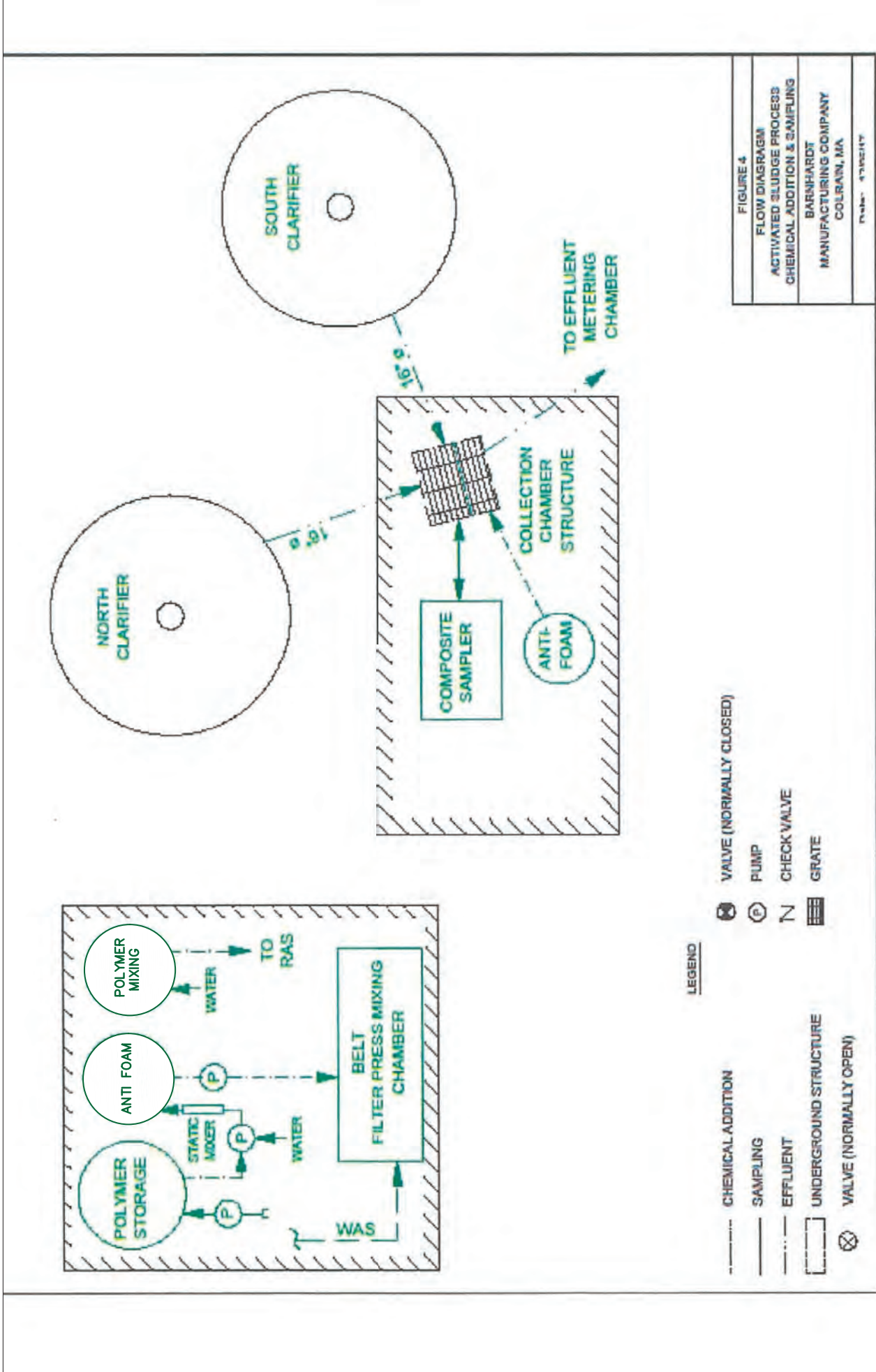




All valves for the wet wells and feed to raw waste pumps are in position for flow into the splitter box, west wet well and east wet well, in that order







**APPENDIX B**  
**2019 ANNUAL NPDES COMPLIANCE REPORTS**



# Applied Technology and Engineering, P.C.

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Phone: (434) 249-6443

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January 15, 2020

U.S. Environmental Protection Agency  
Office of Ecosystem Protection  
EPA/OEP NPDES Applications Coordinator  
5 Post Office Square - Suite 100 (OEP06-03)  
Boston, MA 02109-3912

Ref: Gris WWTP Annual Compliance Report

Sent by Email: [R1NPDESReports@epa.gov](mailto:R1NPDESReports@epa.gov)

To Whom it May Concern:

On behalf of Barnhardt Manufacturing Company, the following report is provided as required by NPDES Permit No. MA0003697 Part 1.B.2 to detail progress towards meeting the final permit limits for phosphorus, copper, and toxicity. A three-year compliance schedule for these parameters was provided. Compliance with the limits for these parameters is required by February 28, 2021.

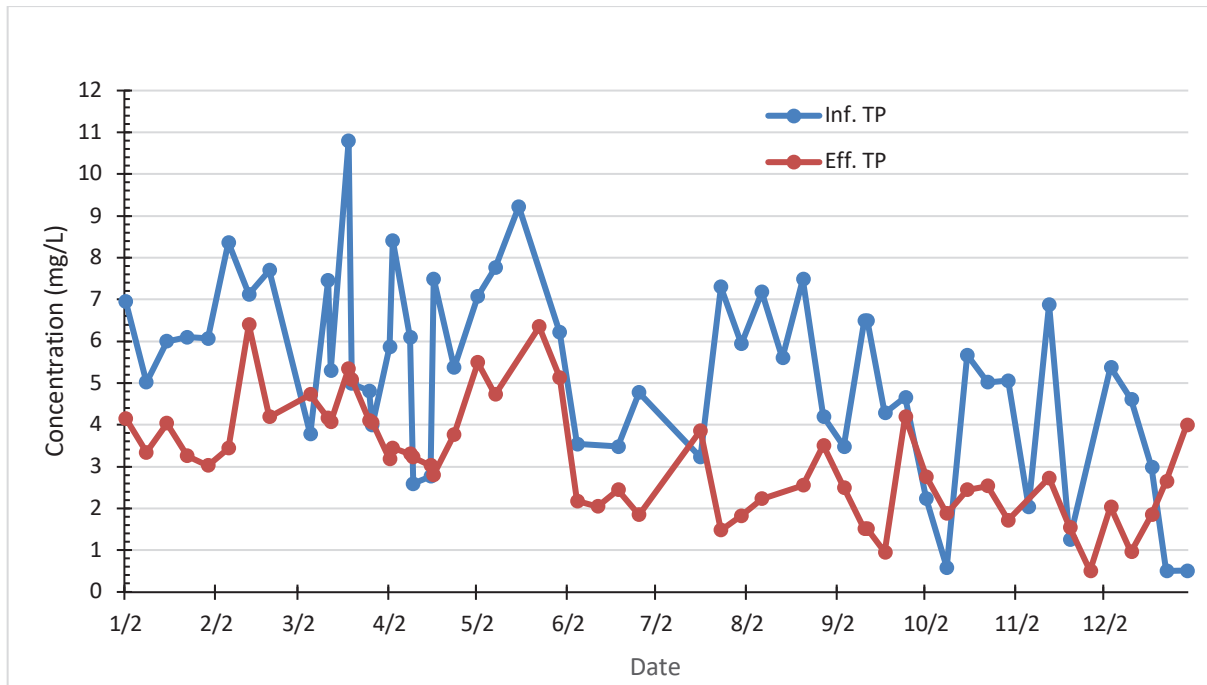
## **Phosphorus**

Currently, Barnhardt is required to only report effluent total phosphorus concentrations. However, the seasonal limit of 1.26 mg/L for May through October will be in effect at the end of the compliance period.

Influent and effluent total phosphorus (TP) concentrations are shown in Figure 1. Data used are shown in Appendix A. The average influent TP concentration was 5.26 mg/L and the average effluent concentration was 3.15 mg/L. Effluent TP and orthophosphate (PO<sub>4</sub>) concentrations are shown in Figure 2. It is observed that on average, 92% of the effluent TP is soluble PO<sub>4</sub>. Since PO<sub>4</sub> is amenable to precipitation using aluminum salts, laboratory trials were conducted to determine phosphorus removal using alum, aluminum chlorohydrate (ACH), and polyaluminum chloride (PAC). The results are shown in Table 1 and Figure 3. Alum appeared to be the most effective. At a dosage of 200 mg/L, both TP and PO<sub>4</sub> were reduced well below the permit limit with values <0.1 and <0.023 mg/L, respectively.

In addition to treatment alternatives, work was done to identify chemicals used in manufacturing that contained phosphorus. The only chemical found to contain significant amounts of phosphorus was a boiler treatment chemical. This chemical was replaced in mid-August 2019.

**Figure 1. Influent and Effluent Total Phosphorus Concentrations**



**Figure 2. Effluent Total Phosphorus and Orthophosphate Concentrations**

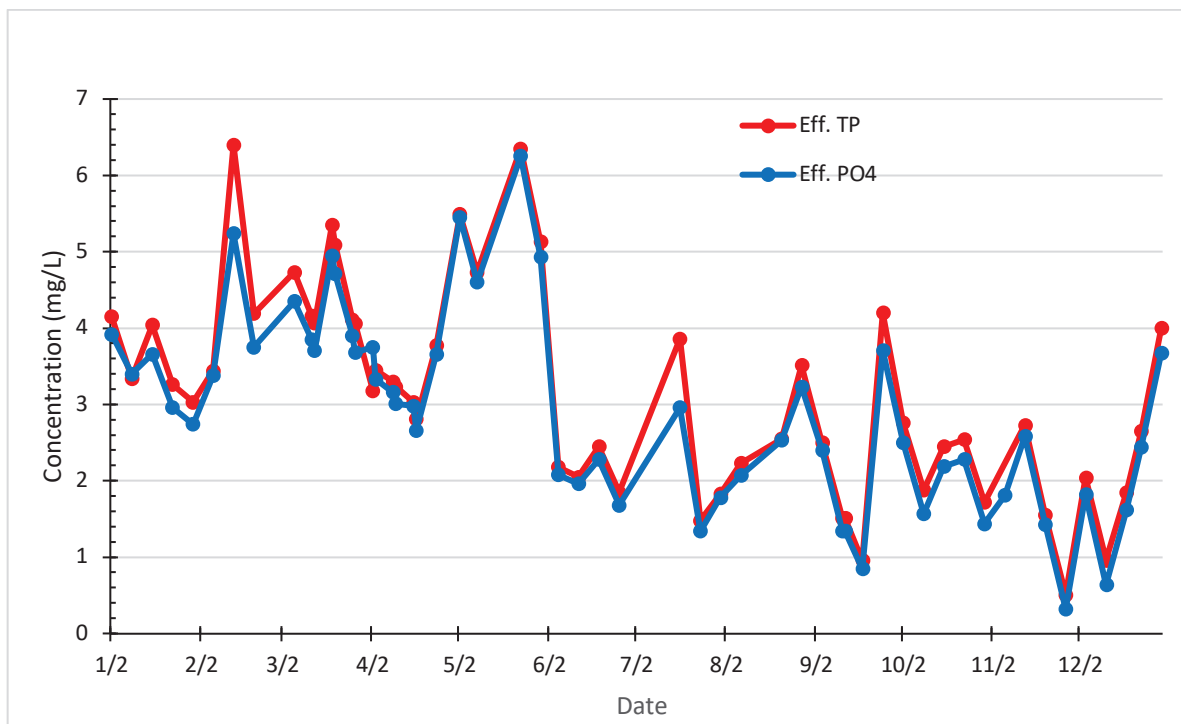


Figure 3. Results of Phosphorus Removal using Aluminum Salts

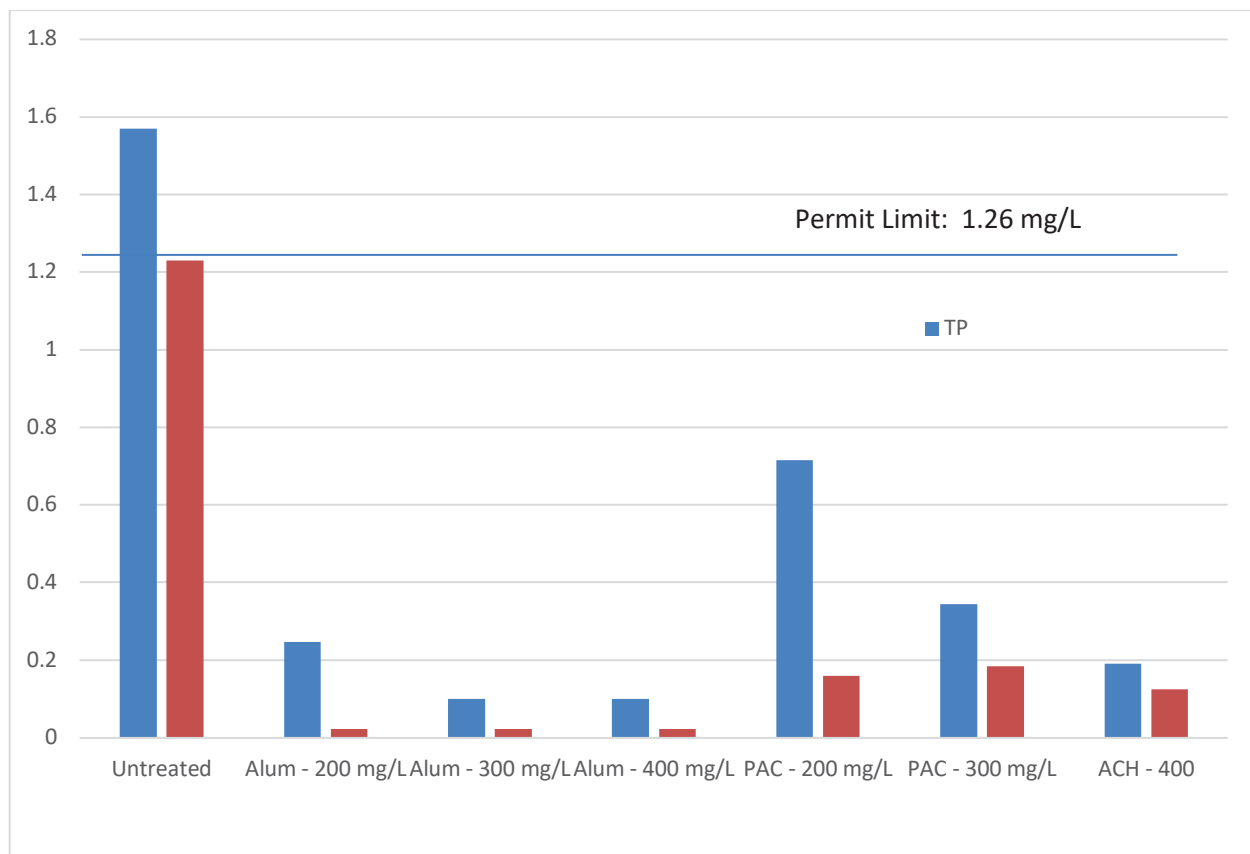


Table 1. Phosphorus Removal with Aluminum Salts

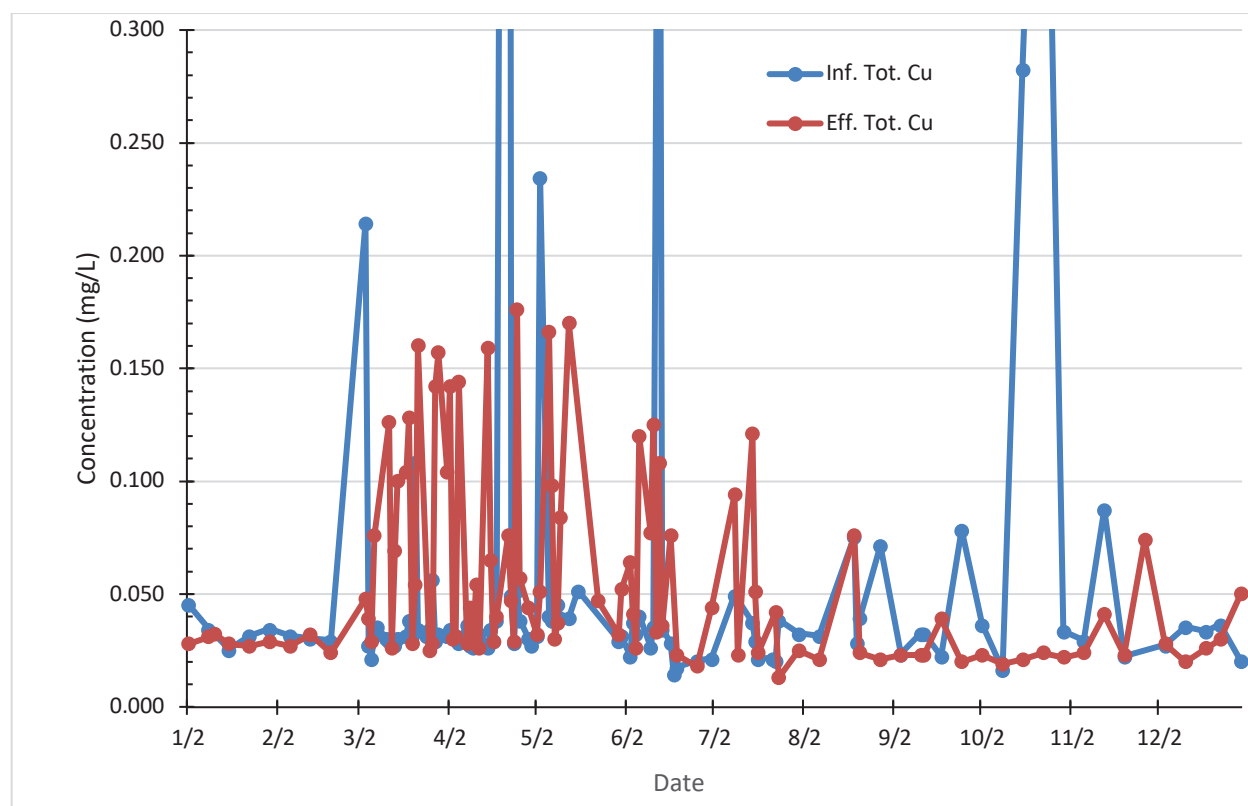
	TP	PO <sub>4</sub>
Untreated	1.57	1.23
Alum - 200 mg/L	0.248	<0.023
Alum - 300 mg/L	<0.1	<0.023
Alum - 400 mg/L	<0.1	<0.023
PAC - 200 mg/L	0.715	0.16
PAC - 300 mg/L	0.345	0.184
ACH - 400	0.192	0.125

During 2020, additional work is planned to confirm these results and to evaluate removal at lower dosages. Work will also be done to determine the engineering requirements for implementation of chemical treatment for phosphorus reduction.

## Copper

Currently, Barnhardt is required to only report effluent total copper (Cu) concentrations. However, the limit of 22  $\mu\text{g/L}$  will be in effect at the end of the compliance period. Influent and effluent total copper concentrations are shown in Figure 4. This data was collected for monitoring purposes and are shown in Appendix B. The average influent Cu concentration was 63  $\mu\text{g/L}$  and the average effluent concentration was 56  $\mu\text{g/L}$ . Effluent concentrations were more stable at the end of 2019 with values often below 30  $\mu\text{g/L}$ .

**Figure 4. Influent and Effluent Total Copper Concentrations**



Copper analyses were performed during the phosphorus removal chemical treatment trials noted above to determine if any insoluble forms of copper would be removed. However, no significant copper removal was observed.

In December 2018, the Quality Assurance Project Plan (QAPP) was submitted to MassDEP for conducting water quality monitoring to be used in a Biotic Ligand Model (BLM) to further assess the site-specific copper criteria used to establish the Barnhardt permit limit. Sampling was begun in May 2019. Results through December are shown in Appendix C. Testing is

scheduled to be completed in the Spring of 2020. Based on the model results, the need for copper removal from the effluent will be further evaluated.

Additional testing is planned in 2020 to evaluate methods of effluent copper removal in the event that the BLM does not provide a site-specific limit that will not require further treatment. These efforts will include treatment and source reduction options.

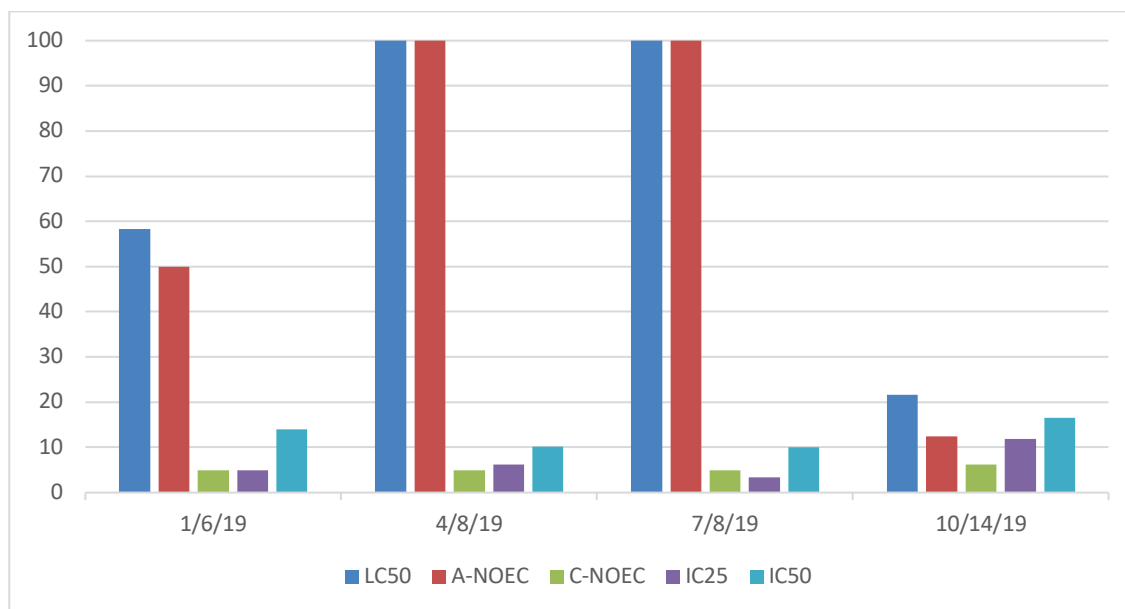
## Toxicity

Currently, the permit limit for acute toxicity is an  $LC_{50}$  of  $>100\%$  and for chronic toxicity the limit is a chronic No Observed Effect Concentration (C-NOEC) of  $>5\%$ . At the end of the compliance period the C-NOEC becomes more restrictive with a limit of  $>7.2\%$ . The 2019 test results are shown in Table 3 and Figure 5.

**Table 3. 2019 Toxicity Test Results**

Permit Limits:	LC50	A-NOEC	C-NOEC	IC25	IC50
Date	$>100\%$		$>5\%$		
1/6/19	58.3	50	$<5$	4.9	14
4/8/19	100	100	$<5$	6.2	10.2
7/8/19	100	100	$<5$	3.35	10
10/14/19	21.6	12.5	6.25	11.9	16.6

**Figure 5. 2019 Toxicity Test Results**



Note that the 5% LC<sub>50</sub> values shown in Figure 5 actually represent values of <5% and were not in compliance with the current permit. Acute toxicity levels exceeded (were more toxic) the permit limit during January and October quarters while the chronic limit was exceeded for January, April, and July quarters. IC<sub>25</sub> values are consistent with the C-NOEC values. All of the chronic values exceeded the pending limit 7.2%.

In an effort to better understand the cause of toxicity, acute and chronic testing was performed on an effluent sample with the following additional treatment:

1. Activated carbon to remove dissolved organics;
2. Membrane filtration (0.045µm) to remove colloidal and suspended solids;
3. EDTA treatment to chelate copper and other metals; and
4. Chemical Coagulation using PAC.

Unfortunately, none of these treatments significantly improved the toxicity when compared to the untreated sample. There is concern that trace levels of herbicide or pesticides are present as contaminants on the cotton and are being removed during the scouring process. These compounds may be highly toxic and resistant to biodegradation or biodegrade into more toxic by-products.

Additional work is proposed to identify the cause of the toxicity or to identify treatment alternatives. Chemicals used in manufacturing have been evaluated and one of the scouring agents is being replaced due to its relatively high concentration of aromatic compounds. Toxicity testing is being considered for other manufacturing chemicals. Testing is also proposed to evaluate for the presence of trace levels of pesticides or herbicides that may be present on the raw cotton. In terms of treatment alternatives, additional testing is proposed to further evaluate the use of activated carbon, advanced oxidation and other treatments including those outlined in the EPA Aquatic Toxicity Identification Evaluation (TIE) protocols.<sup>1,2,3</sup>

## Conclusion

In conclusion, work has been completed and is on-going to evaluate methods for compliance with the phosphorus, copper and toxicity limits. Compliance with the phosphorus limit appears to be achievable by precipitation with alum. In the event that the BLM does not justify higher site-specific limits for copper resulting in permit compliance, additional chemical treatment or source reduction may be needed for this parameter. Available methods are being evaluate. Toxicity reduction is the most challenging issue in that toxicity was not reduced using enhanced treatment such as activated carbon. In addition, the toxicity may be caused by trace levels of toxicants such as herbicides or biocides or oxidation by-products. TIE protocols are proposed to

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<sup>1</sup> USEPA (1991). Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures. EPA/600/6-91/003.

<sup>2</sup> USEPA (1993). Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity. EPA-600/R-92/080.

<sup>3</sup> USEPA (1993). Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity. EPA-600/R-92/081.

further evaluate toxicity. Work will continue into 2020 in an effort to be in compliance with the permit limits as required by the compliance schedule.

If you have any questions or need additional information, please feel to contact me or either Mr. Tom Robinson or Mr. Greg Morand at the numbers shown below.

Tom Robinson, Barnhardt Mfg., Phone: 704-376-0380

Greg Morand, Omni Environmental, Phone: 978-256-6766, Ext. 102

Sincerely,

A handwritten signature in black ink, reading "W. Gilbert O'Neal". The signature is written in a cursive style with a large, stylized "W" and "O".

W. Gilbert O'Neal, Ph.D., P.E.  
President

Cc: Greg Morand, Omni Environmental Group  
Tom Robinson, Barnhardt Mfg.  
Lewis Barnhardt, Barnhardt Mfg.  
MASS-DEP Western Region, Bureau of Water Resources

## Appendix A. 2019 Phosphorus Data

<b>SampleDate</b>	<b>Inf. TP</b>	<b>Eff. TP</b>	<b>Inf. PO4</b>	<b>Eff. PO4</b>
1/2/2019	6.95	4.15	2.12	3.92
1/9/2019	5.02	3.34	3	3.4
1/16/2019	6	4.04	3.68	3.66
1/23/2019	6.1	3.26	3.74	2.96
1/30/2019	6.07	3.03	3.56	2.74
2/6/2019	8.36	3.44	6.16	3.38
2/13/2019	7.12	6.4	4.28	5.24
2/20/2019	7.7	4.19	4.72	3.75
3/6/2019	3.78	4.73	2.24	4.35
3/12/2019	7.46	4.16	5.75	3.85
3/13/2019	5.3	4.07	3.51	3.71
3/19/2019	10.8	5.35	7.55	4.95
3/20/2019	4.99	5.09	2.97	4.71
3/26/2019	4.81	4.11	2.9	3.9
3/27/2019	3.99	4.06	2.24	3.68
4/2/2019	5.87	3.18	3.9	3.75
4/3/2019	8.41	3.45	5.85	3.33
4/9/2019	6.09	3.3	4.18	3.16
4/10/2019	2.59	3.23	1.4	3.01
4/16/2019	2.77	3.03	1.76	2.98
4/17/2019	7.49	2.81	5.95	2.66
4/24/2019	5.37	3.77	3.51	3.66
5/2/2019	7.08	5.49	4.85	5.45
5/8/2019	7.76	4.73	4.88	4.6
5/16/2019	9.22		6.45	
5/23/2019		6.35		6.25
5/30/2019	6.21	5.13	4.55	4.93
6/5/2019	3.54	2.18	2.02	2.08
6/12/2019		2.05		1.96
6/19/2019	3.48	2.45	2.52	2.28
6/26/2019	4.77	1.85	3.75	1.68
7/17/2019	3.23	3.86	1.67	2.96
7/24/2019	7.3	1.48	5.3	1.34
7/31/2019	5.94	1.83	4.27	1.78
8/7/2019	7.18	2.23	5	2.07



SampleDate	Inf. TP	Eff. TP	Inf. PO4	Eff. PO4
8/14/2019	5.6		3.79	
8/21/2019	7.48	2.55	5.3	2.53
8/28/2019	4.2	3.51	2.86	3.23
9/4/2019	3.48	2.5	1.75	2.4
9/11/2019	6.49	1.51	5.2	1.34
9/12/2019	6.49	1.51	5.2	1.34
9/18/2019	4.28	0.955	3.69	0.847
9/25/2019	4.66	4.2	3.28	3.71
10/2/2019	2.23	2.76	1.02	2.5
10/9/2019	0.586	1.88	0.211	1.57
10/16/2019	5.67	2.45	3.58	2.19
10/23/2019	5.02	2.54	3.42	2.28
10/30/2019	5.06	1.72	3.1	1.44
11/6/2019	2.04		1.27	1.81
11/13/2019	6.88	2.73	3.57	2.58
11/20/2019	1.25	1.55	0.585	1.43
11/27/2019		0.509		0.319
12/4/2019	5.38	2.04	3.92	1.82
12/11/2019	4.61	0.959	0.62	0.637
12/18/2019	2.99	1.85	1.74	1.62
12/23/2019	0.503	2.65	0.1	2.44
12/30/2019	0.511	4	0.284	3.67
Average	5.26	3.15	3.42	2.91
Max.	10.80	6.40	7.55	6.25
Min.	0.50	0.51	0.10	0.32

Appendix B. Influent and Effluent Copper Data

<b>SampleDate</b>	<b>Inf. Tot. Cu</b>	<b>Eff. Tot. Cu</b>	<b>Eff. Sol. Cu</b>
1/2/2019	0.045	0.028	
1/9/2019	0.034	0.031	
1/11/2019		0.0324	
1/16/2019	0.025	0.028	
1/23/2019	0.031	0.027	
1/30/2019	0.034	0.029	
2/6/2019	0.031	0.027	
2/13/2019	0.03	0.032	
2/20/2019	0.029	0.024	
3/4/2019	0.214	0.048	
3/5/2019	0.027	0.039	
3/6/2019	0.021	0.029	
3/7/2019	0.031	0.076	
3/8/2019	0.035		0.057
3/11/2019	0.03		0.164
3/12/2019	0.029	0.126	
3/13/2019	0.028	0.026	
3/14/2019	0.027	0.069	
3/15/2019	0.03	0.1	
3/18/2019	0.031	0.104	
3/19/2019	0.038	0.128	
3/20/2019	0.031	0.028	
3/21/2019	0.108	0.054	
3/22/2019	0.034	0.16	
3/25/2019	0.031		0.034
3/26/2019	0.034	0.025	
3/27/2019	0.056	0.028	
3/28/2019	0.029	0.142	
3/29/2019	0.032	0.157	
4/1/2019	0.031	0.104	
4/2/2019	0.034	0.142	
4/3/2019	0.032	0.03	
4/4/2019	0.031	0.031	
4/5/2019	0.028	0.144	
4/8/2019	0.036	0.028	
4/9/2019	0.027	0.044	

SampleDate	Inf. Tot. Cu	Eff. Tot. Cu	Eff. Sol. Cu
4/10/2019	0.026	0.029	0.027
4/11/2019	0.032	0.054	
4/12/2019	0.032	0.026	
4/15/2019	0.026	0.159	
4/16/2019	0.034	0.065	0.065
4/17/2019	0.029	0.029	
4/18/2019	0.038	0.04	
4/22/2019	1.36	0.076	
4/23/2019	0.049	0.047	
4/24/2019	0.028	0.029	
4/25/2019	0.051	0.176	
4/26/2019	0.038	0.057	
4/29/2019	0.03	0.044	
4/30/2019	0.027		0.146
5/2/2019	0.031	0.032	0.034
5/3/2019	0.234	0.051	
5/6/2019	0.04	0.166	
5/7/2019	0.038	0.098	
5/8/2019	0.038	0.03	
5/9/2019	0.045	0.037	
5/10/2019	0.039	0.084	
5/13/2019	0.039	0.17	
5/16/2019	0.051		
5/23/2019		0.047	
5/30/2019	0.029	0.032	
5/31/2019	0.031	0.052	
6/3/2019	0.022	0.064	
6/4/2019	0.037	0.041	
6/5/2019	0.032	0.026	
6/6/2019	0.04	0.12	
6/10/2019	0.026	0.077	
6/11/2019	0.035	0.125	
6/12/2019		0.033	0.032
6/13/2019	0.539	0.108	
6/14/2019	0.034	0.036	
6/17/2019	0.028	0.076	
6/18/2019	0.014		
6/19/2019	0.017	0.023	0.021

6/26/2019	0.02	0.018	0.016
7/1/2019	0.021	0.044	
7/9/2019	0.049	0.094	
7/10/2019		0.023	
7/15/2019	0.037	0.121	
7/16/2019	0.029	0.051	
7/17/2019	0.021	0.024	0.023
7/22/2019	0.021		0.058
7/23/2019	0.02	0.042	
7/24/2019	0.038	0.013	0.017
7/31/2019	0.032	0.025	
8/7/2019	0.031	0.021	
8/19/2019	0.075	0.076	
8/20/2019	0.028		0.124
8/21/2019	0.039	0.024	0.022
8/28/2019	0.071	0.021	
9/4/2019	0.023	0.023	
9/11/2019	0.032	0.023	
9/12/2019	0.032	0.023	
9/18/2019	0.022	0.039	0.034
9/25/2019	0.078	0.02	
10/2/2019	0.036	0.023	
10/9/2019	0.016	0.019	
10/16/2019	0.282	0.021	
10/23/2019	0.517	0.024	0.021
10/30/2019	0.033	0.022	0.022
11/6/2019	0.029	0.024	
11/13/2019	0.087	0.041	0.035
11/20/2019	0.022	0.023	0.019
11/27/2019		0.074	
12/4/2019	0.027	0.028	
12/11/2019	0.035	0.02	0.021
12/18/2019	0.033	0.026	0.027
12/23/2019	0.036	0.03	0.027
12/30/2019	0.02	0.05	0.046
Average	0.063	0.056	0.046
Max.	1.360	0.176	0.164
Min.	0.014	0.013	0.016

Appendix C. BLM Data

LABORATORY ANALYTICAL RESULTS (units in mg/L unless otherwise shown)											FIELD PARAMETERS				
Sample ID	Sample Date	Suspended Solids	Sulfate	Chloride	Total Alkalinity	Dissolved Organic Carbon	Turbidity (NTU)	Temperature (°C)	Specific Conductivity (µS/cm)	pH (Units)	Dissolved Oxygen (mg/L)				
Upstream	5/8/2019	5	U	3.9	22	1.9	1	U	13.00	7.55	11.22				
	6/19/2019	2	U	3.5	22	2.5	1	U	18.00	81	8.55				
	7/22/2019	2	U	4.8	34	1.7	1	U	22.00	120	7.17				
	8/14/2019	2	U	4.8	35	1.8	1	U	21.00	120	7.65				
	9/17/2019	2	U	4.9	37	1.8	1	U	15.00	120	8.49				
	10/8/2019	2	U	4.9	34	1.9	1	U	14.00	120	8.40				
	11/5/2019	2	U	4.2	21	3.3	1	U	9.00	80	NA				
	12/19/2019	2.4	4.4	6.9	17	2.1	1	1.00	83	7.56	14.86				
Downstream	5/8/2019	5	U	4.4	31	2.5	1	U	16.00	100	8.66				
	6/19/2019	2	U	5.0	28	2.9	1	U	19.00	100	7.87				
	7/22/2019	2	U	8.1	89	4.7	1	U	22.00	240	7.55				
	8/14/2019	2	U	8.1	92	5.9	1	U	22.00	240	7.90				
	9/17/2019	2	U	12	68	3.8	1	U	17.00	200	7.88				
	10/8/2019	3	7.6	11	60	3.8	1.3	14.00	180	7.57	8.46				
	11/5/2019	2	U	5.0	34	4.3	1	U	9.00	110	NA				
	12/19/2019	2	U	5.3	25	2.6	2	1.00	100	7.24	14.70				
Effluent	5/8/2019	12	99	14	1,500	110	1	23.00	3,100	8.66	NM				
	6/20/2019	2.8	220	2.9	1,000	69	1.3	18.00	2,400	8.45	6.57				
	7/23/2019	4.6	53	14	830	53	1.3	11.00	1,700	8.35	9.26				
	8/15/2019	5.4	77	22	1,200	90	1.8	11.00	2,500	8.73	8.10				
	9/18/2019	11	230	21	970	61	3	11.00	2,300	8.60	4.88				
	10/9/2019	23	110	23	1,100	71	7.4	7.00	2,400	8.65	8.82				
	11/6/2019	24	7.0	1.6	1,000	75	7	4.00	2,200	8.75	NA				
	12/19/2019	28	130	17	1,100	97	10	3.00	2,600	8.54					
Duplicate	5/8/2019	5	U	4.5	31	2.5	1	U	NA	NA	NA				
	6/19/2019	2	U	4.9	29	3.0	1	U	NA	NA	NA				
	7/22/2019	2	U	8.2	11	4.6	1	U	NA	NA	NA				
	8/14/2019	2.2	8.1	11	93	6.0	1	U	NA	NA	NA				
	9/17/2019	2	U	12	68	3.7	1	U	NA	NA	NA				
	10/8/2019	2.2	7.7	11	59	3.8	1.2	NA	NA	NA	NA				
	11/5/2019	2	U	5.1	34	4.1	1	U	NA	NA	NA				
	12/19/2019	2	U	5.3	26	2.6	2	NA	NA	NA	NA				

NOTES:

NTU = Nephelometric Turbidity Units  
 mg/L = Milligrams per liter  
 U = Not detected by laboratory in concentration at or above reporting limit that is presented in previous column  
 (µS/cm) - Micro Siemens per centimeter  
 (mV) - Millivolts  
 NA - Not Applicable  
 NM - Not Measured

LABORATORY ANALYTICAL RESULTS (mg/L)									
Sample ID	Sample Date	Calcium	Dissolved Copper	Total Copper	Magnesium	Potassium	Sodium	Total Hardness	
Upstream	5/8/2019	9.1	0.0007	0.0005	0.98	1.0	5.0	27	
	6/19/2019	8.5	0.0009	0.0008	1.3	0.96	5.4	27	
	7/22/2019	14	0.0010	0.0008	1.5	1.7	7.3	40	
	8/14/2019	13	0.00074	0.00068	1.5	1.6	7.4	39	
	9/17/2019	13	0.0007	0.00065	1.6	1.6	7.9	40	
	10/8/2019	13	0.00055	0.00063	1.5	1.7	7.1	39	
	11/5/2019	8.3	0.00067	0.00085	1.1	1.3	5.3	26	
	12/19/2019	8.5	0.00069	0.00084	1.0	1.0	4.7	25	
Downstream	5/8/2019	9.2	0.0021	0.0007	1.0	1.6	11	27	
	6/19/2019	8.6	0.0009	0.0009	1.3	1.3	8.6	27	
	7/22/2019	14	0.0017	0.0016	1.7	4.0	36	41	
	8/14/2019	13	0.0021	0.0017	1.7	4.3	36	40	
	9/17/2019	14	0.0014	0.0014	1.8	3.6	30	43	
	10/8/2019	14	0.0023	0.0011	1.7	2.9	21	41	
	11/5/2019	8.6	0.0011	0.0012	1.2	2.0	11	26	
	12/19/2019	8.9	0.00097	0.00086	1.0	1.3	8.1	26	
Effluent	5/9/2019	20	0.022	0.022	8.8	82	780	87	
	6/20/2019	14	0.016	0.016	5.9	47	510	59	
	7/23/2019	17	0.011	0.013	5.1	37	400	64	
	8/15/2019	19	0.016	0.018	7.5	62	600	79	
	9/18/2019	19	0.014	0.015	7.1	54	570	76	
	10/9/2019	12	0.015	0.018	7.2	58	570	59	
	11/6/2019	14	0.016	0.019	7.2	66	530	65	
	12/19/2019	6.7	0.019	0.019	7.6	74	590	48	
Duplicate	5/8/2019	9.0	0.0015	0.0007	1.0	1.6	10	27	
	6/19/2019	8.6	0.0009	0.0009	1.3	1.2	8.6	27	
	7/22/2019	14	0.0016	0.0017	1.7	3.9	36	41	
	8/14/2019	13	0.0017	0.0018	1.7	4.5	37	40	
	9/17/2019	14	0.0014	0.0017	1.8	3.6	30	43	
	10/8/2019	14	0.0014	0.0013	1.8	2.9	21	43	
	11/5/2019	8.4	0.00097	0.00090	1.2	2.0	11	26	
	12/19/2019	8.8	0.00010	0.00013	1.1	1.4	8.2	26	

**NOTES:**

mg/L = Milligrams per liter

U = Not detected by laboratory in concentration at or above reporting limit that is presented in previous column

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January 15, 2020

U.S. Environmental Protection Agency  
Office of Ecosystem Protection  
EPA/OEP NPDES Applications Coordinator  
5 Post Office Square - Suite 100 (OEP06-03)  
Boston, MA 02109-3912

Ref: Gris WWTP Annual Nitrogen Report

Sent by Email: [R1NPDESReports@epa.gov](mailto:R1NPDESReports@epa.gov)

To Whom it May Concern:

On behalf of Barnhardt Manufacturing Company, the following report is provided as required by NPDES Permit No. MA0003697 Part 1.B.2 to summarize activities related to optimizing the effectiveness of nitrogen removal methods, documentation of the annual nitrogen discharge load from the facility and a comparison of previous year loads.

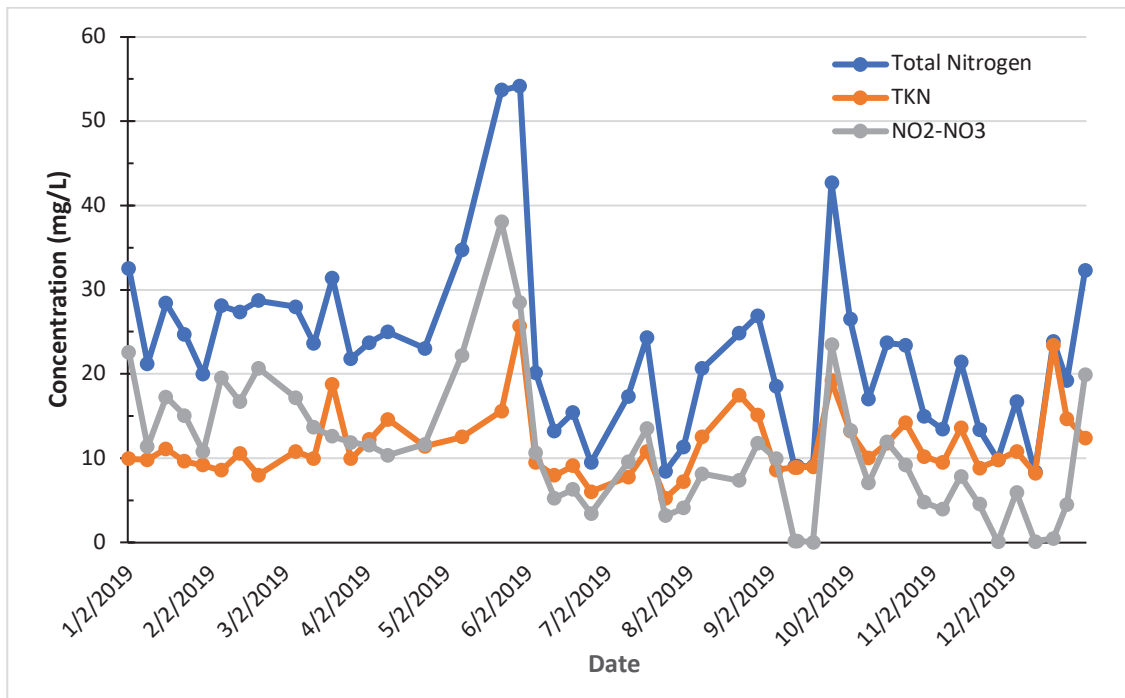
The nitrogen removal optimization report required by the NPDES permit was submitted on February 28, 2019. The report concluded that the WWTP was being operated efficiently and in a manner that promoted nitrification. No operational changes that would improve nitrogen removal were identified. However, it was recognized that a large part of the total nitrogen being discharged was related to nitrites and nitrates (NO<sub>x</sub>) and that levels could be removed using anoxic denitrification. The report noted that this would require capital investments for mixing and control and would also require significant operational changes. No commitment was made to pursue this alternative.

The WWTP continues to be operated in a manner that will promote nitrification. Figure 1 shows concentrations for total nitrogen (TN), Total Kjeldahl Nitrogen (TKN) and NO<sub>x</sub> for 2019. Based on concentration values, NO<sub>x</sub> represented around 50% of the TN discharged. Figure 2 shows the effluent concentrations for ammonia (NH<sub>3</sub>) and NO<sub>x</sub>. This demonstrates relatively low concentrations of NH<sub>3</sub> in the effluent with high concentrations of NO<sub>x</sub> as a result of nitrification.

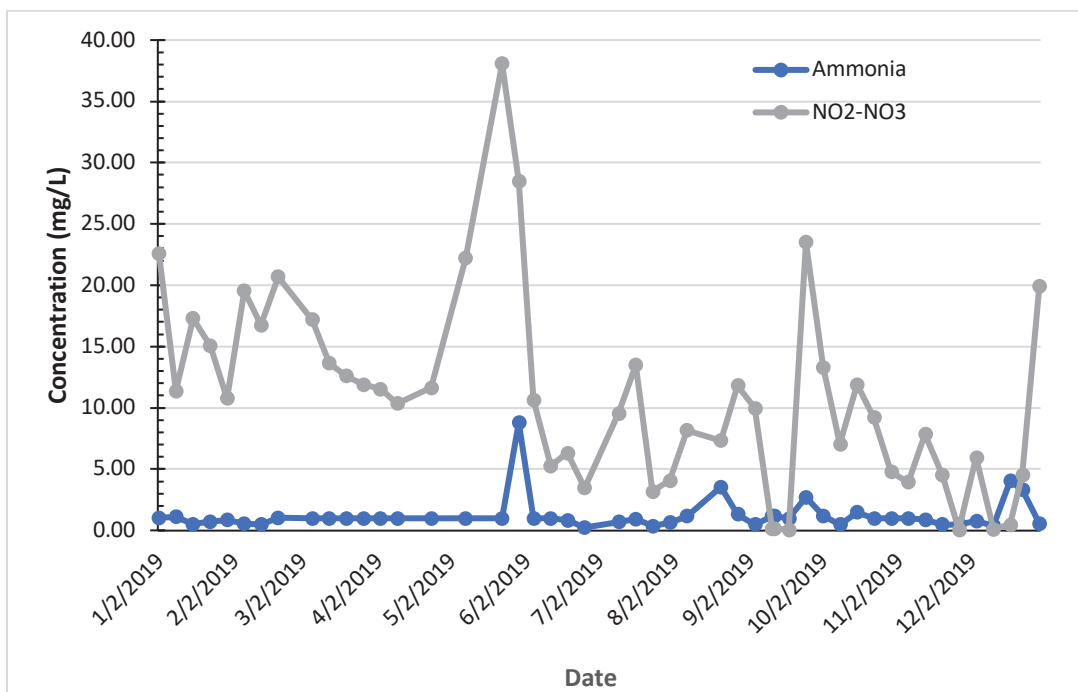
The TN effluent loadings for 2019 are shown in Figure 3. The average effluent TN loading for 2019 was 70.1 lbs/day.

A comparison of effluent TN loading is shown in Figure 4 for 2011 through 2019. Loadings for 2019 were higher than for 2018. It should be noted that effluent nitrogen concentrations were historically measured infrequently based on permit requirements. Prior to the current permit,

**Figure 1. 2019 Effluent Concentrations for Total Nitrogen, Total Kjeldahl Nitrogen and Nitrite-Nitrate**

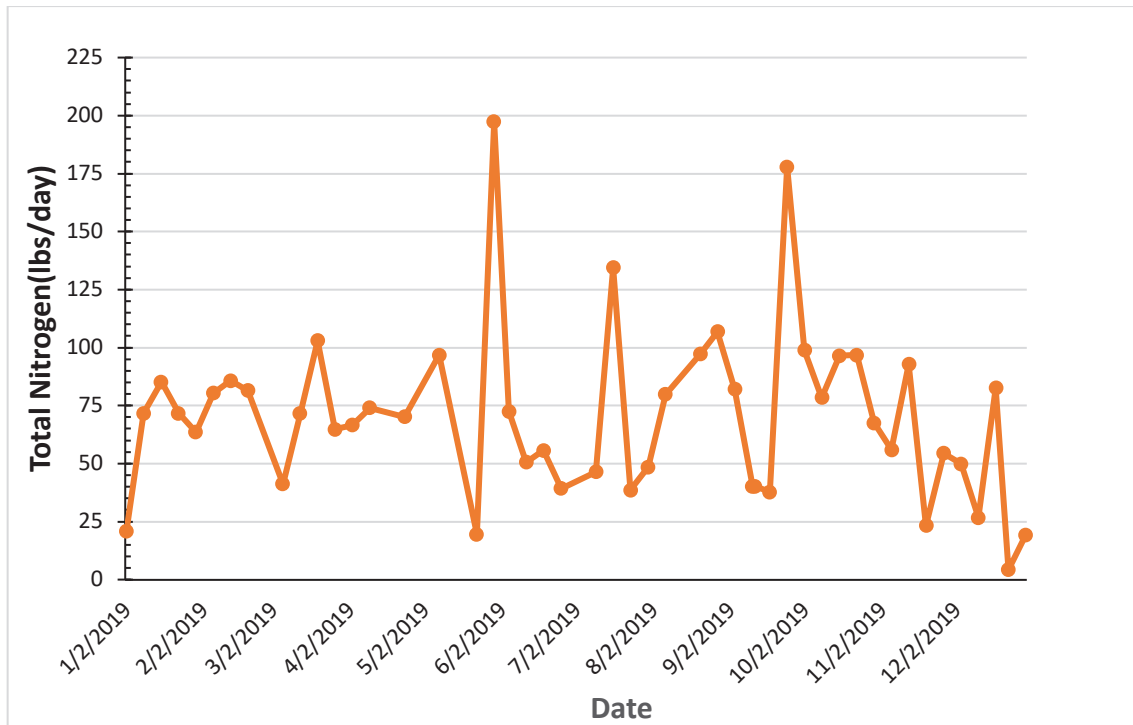


**Figure 2. 2019 Effluent Concentrations for Ammonia and Nitrite-Nitrate**

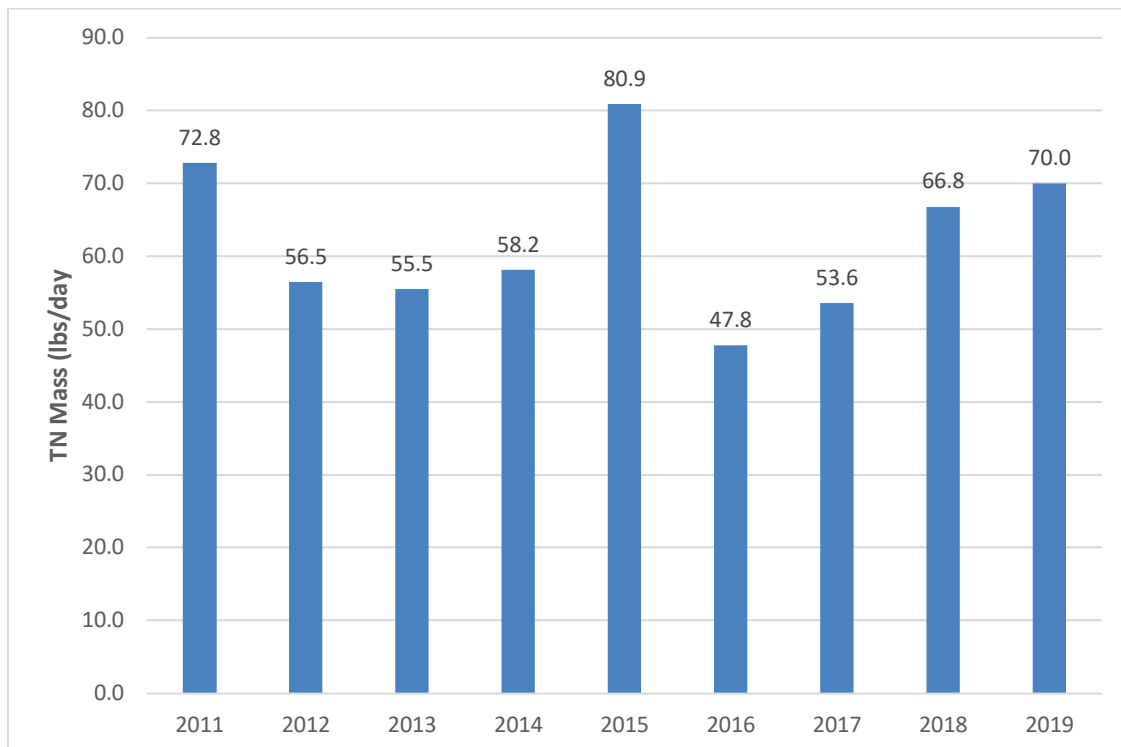




**Figure 3. 2019 Effluent Total Nitrogen Loading**



**Figure 4. 2011 - 2019 Effluent Total Nitrogen Loading Comparison**



nitrogen measurements were made once per month. However, the current permit requires monitoring twice per month for parameters related to TN. Given the variability of the flows and nitrogen concentrations, and the change in testing frequency, the results may not be representative for comparison across the data range presented.

Data used in this report are shown in Appendix A.

As indicated in the optimization report, the source of the nitrogen appears to be the raw cotton and is in the form of organic nitrogen. No chemicals used in processing that contain significant concentrations of nitrogen have been identified.

If you have any questions or need additional information, please feel to contact me or either Mr. Tom Robinson or Mr. Greg Morand at the numbers shown below.

Tom Robinson, Barnhardt Mfg., Phone: 704-376-0380

Greg Morand, Omni Environmental, Phone: 978-256-6766, Ext. 102

Sincerely,

A handwritten signature in dark ink, reading "W. Gilbert O'Neal". The signature is written in a cursive, flowing style.

W. Gilbert O'Neal, Ph.D., P.E.  
President

Cc: Greg Morand, Omni Environmental Group  
Tom Robinson, Barnhardt Mfg.  
Lewis Barnhardt, Barnhardt Mfg.  
MASS-DEP Watershed Planning Program

Date	Flow mgd	NO2 mg/L	NO3 mg/L	NO2- NO3 mg/L	NH3 mg/L	NH3 lbs/day	TKN mg/L	Org N mg/L	TN mg/L	TN lbs/day
01/02/19	0.077	0.96	21.60	22.56	1.04	0.67	9.94	8.90	32.50	20.92
01/09/19	0.405	0.58	10.80	11.38	1.12	3.79	9.82	8.70	21.20	71.66
01/16/19	0.360	0.08	17.20	17.28	0.52	1.56	11.10	10.58	28.38	85.18
01/23/19	0.348	0.06	15.00	15.06	0.72	2.09	9.65	8.93	24.71	71.73
01/30/19	0.382	0.18	10.60	10.78	0.86	2.74	9.16	8.30	19.94	63.62
02/06/19	0.343	0.23	19.30	19.53	0.57	1.63	8.57	8.00	28.10	80.38
02/13/19	0.376	0.05	16.70	16.75	0.48	1.51	10.60	10.12	27.35	85.78
02/20/19	0.340	0.18	20.50	20.68	1.03	2.92	8.00	6.97	28.68	81.41
03/06/19	0.177	0.08	17.10	17.18	1.00	1.47	10.80	9.80	27.98	41.21
03/13/19	0.363	0.04	13.60	13.64	1.00	3.03	9.98	8.98	23.62	71.59
03/20/19	0.393	0.71	11.90	12.61	1.00	3.28	18.80	17.80	31.41	102.98
03/27/19	0.356	0.28	11.60	11.88	1.00	2.97	9.94	8.94	21.82	64.78
04/03/19	0.337	0.13	11.40	11.53	1.00	2.81	12.20	11.20	23.73	66.62
04/10/19	0.356	0.07	10.30	10.37	1.00	2.97	14.60	13.60	24.97	74.04
04/24/19	0.365	0.04	11.60	11.64	1.00	3.05	11.40	10.40	23.04	70.21
05/08/19	0.334	0.10	22.10	22.20	1.00	2.79	12.50	11.50	34.70	96.78
05/23/19	0.044	0.27	37.80	38.07	1.00	0.36	15.60	14.60	53.67	19.53
05/30/19	0.436	0.28	28.20	28.48	8.80	32.03	25.70	16.90	54.18	197.23
06/05/19	0.432	0.05	10.60	10.65	1.00	3.60	9.48	8.48	20.13	72.55
06/12/19	0.458	0.09	5.17	5.26	1.00	3.82	7.98	6.98	13.24	50.57
06/19/19	0.433	3.44	2.86	6.30	0.83	3.00	9.09	8.26	15.39	55.63
06/26/19	0.497	0.05	3.41	3.46	0.25	1.04	6.01	5.76	9.47	39.29
07/10/19	0.321	0.09	9.46	9.55	0.69	1.85	7.79	7.10	17.34	46.47
07/17/19	0.663	4.88	8.62	13.50	0.93	5.14	10.80	9.87	24.30	134.38
07/24/19	0.549	0.06	3.12	3.18	0.35	1.60	5.24	4.89	8.42	38.53

Date	Flow mgd	NO2 mg/L	NO2-					TKN mg/L	Org N mg/L	TN mg/L	TN lbs/day
			NO3 mg/L	NO3 mg/L	NH3 mg/L	NH3 lbs/day	NH3 mg/L				
07/31/19	0.513	0.10	3.98	4.08	0.65	2.78	7.25	6.60	11.33	48.51	
08/07/19	0.463	0.93	7.23	8.16	1.17	4.52	12.50	11.33	20.66	79.81	
08/21/19	0.469	0.44	6.90	7.34	3.54	13.85	17.50	13.96	24.84	97.16	
08/28/19	0.476	0.82	11.00	11.82	1.32	5.24	15.10	13.78	26.92	106.83	
09/04/19	0.530	0.14	9.83	9.97	0.49	2.17	8.59	8.10	18.56	82.06	
09/11/19	0.532	0.02	0.14	0.16	1.17	5.19	8.92	7.75	9.08	40.27	
09/12/19	0.532	0.02	0.14	0.16	1.17	5.19	8.92	7.75	9.08	40.27	
09/18/19	0.502	0.01	0.03	0.04	1.00	4.19	8.98	7.98	9.02	37.81	
09/25/19	0.500	19.90	3.60	23.50	2.72	11.33	19.20	16.48	42.70	177.89	
10/02/19	0.447	0.80	12.50	13.30	1.21	4.51	13.20	11.99	26.50	98.89	
10/09/19	0.552	0.25	6.79	7.04	0.50	2.30	10.00	9.50	17.04	78.50	
10/16/19	0.488	2.88	9.02	11.90	1.49	6.07	11.80	10.31	23.70	96.49	
10/23/19	0.496	2.06	7.15	9.21	1.00	4.13	14.20	13.20	23.41	96.75	
10/30/19	0.541	0.45	4.32	4.77	1.00	4.51	10.20	9.20	14.97	67.52	
11/06/19	0.500	0.49	3.44	3.93	1.00	4.17	9.48	8.48	13.41	55.93	
11/13/19	0.518	3.61	4.25	7.86	0.89	3.85	13.60	12.71	21.46	92.71	
11/20/19	0.208	1.89	2.66	4.55	0.50	0.87	8.83	8.33	13.38	23.23	
11/27/19	0.665	0.02	0.03	0.05	0.50	2.77	9.77	9.27	9.82	54.47	
12/04/19	0.357	4.24	1.71	5.95	0.77	2.29	10.80	10.03	16.75	49.89	
12/11/19	0.385	0.06	0.05	0.11	0.39	1.25	8.21	7.82	8.32	26.72	
12/18/19	0.415	0.40	0.08	0.48	4.04	13.98	23.40	19.36	23.88	82.60	
12/23/19	0.026	3.88	0.63	4.51	3.33	0.73	14.70	11.37	19.21	4.24	
12/30/19	0.071	17.20	2.72	19.92	0.58	0.34	12.40	11.82	32.32	19.21	
Average	0.403	1.53	9.35	10.88	1.24	4.12	11.51	10.26	22.39	70.02	
Max	0.665	19.90	37.80	38.07	8.80	32.03	25.70	19.36	54.18	197.23	
Min	0.026	0.01	0.03	0.04	0.25	0.34	5.24	4.89	8.32	4.24	

**APPENDIX C**  
**MATERIAL STORAGE TABLE**

# Material Storage Information

Barnhardt Manufacturing Company  
247 Main Road  
Colrain, MA

Number	Description/Contents	Size	Construction	Unit
<b>WWTP Lab and Blower Building</b>				
1	Polymer Mix Tank	500	Fiberglass	Gal
2	Antifoam Mix Tank	500	Fiberglass	Gal
3	Polymer Holding Tank	500	Plastic	Gal
4	Antifoam 30L	55	Plastic drum	Gal
5	Sulfuric 942 Polymer	250	Plastic Tote	Gal
6	Antifoam Mix Tank	300	Polyethylene	Gal
7	Lime Regular	2,800	Pallet - Bags	lb
8	Lime Quick	1,250	Pallet - Bags	lb
<b>Filter House Building No. 116 and Boiler House Building No. 117</b>				
9	Dispersall HP-2500 Polymer	55	Plastic Drum	Gal
10	Oxygen Scavenger (Oxtrol DS Amine)	55	Plastic Drum	Gal
11	Return Line Treatment (Volamine RL-202 Sulfite)	55	Plastic Drum	Gal
12	Caustic, Polymer, Oxygen Scavenger Mixing Tank	55	Metal	Gal
13	Water Boiler Line Cleaner	55	Metal Drum	Gal
14	Caustic	20	Plastic	Gal
15	Dispersall HP-2500, Volamine, Oxtrol, PS-939	55	Plastic Drum	Gal
16	Boiler Water Treatment PS-939 (Clayton)	55	Plastic Drum	Gal
17	Hydrogen Peroxide 50%	55	Plastic Drum	Gal
18	Low Sulfur Diesel Fuel	20,000	Carbon Steel	Gal
19	Low Sulfur Diesel Fuel	20,000	Carbon Steel	Gal
20	Low Sulfur Diesel Fuel	20,000	Carbon Steel	Gal
21	Low Sulfur Diesel Fuel	20,000	Carbon Steel	Gal
22	Low Sulfur Diesel Fuel	500	Carbon Steel	Gal
23	Salt Crystals	2,000	Pallet - Bags	lb
<b>Screen Building No. 132</b>				
24	93% sulfuric Acid	55	Metal Drum	Gal
25	Mayoquest 1860	55	Metal Drum	Gal
26	50% sodium hydroxide	1,000	Carbon Steel	Gal
<b>Lower Bleachery Building No. 134</b>				
27	Dissolvine D-40 Chelator	2500	304SS	Gal
28	Sulfuric Acid 93%	300	Carbon Steel	Gal
29	Sodium Hydroxide 50% (Caustic)	10000	304SS	Gal
30	Lavawash	2700	304SS	Gal
31	Lavawash	2700	304SS	Gal
32	Dissolvine D-40 Chelator	2800	304SS	Gal
33	Sodium Bisulfite	2000	304SS	Gal
34	Empty Sulfuric Acid totes	196	Plastic Tote	Gal
35	Citric Acid	2000	Pallet - Bags	lb
36	Mayoquest 1860	55	Plastic Drums	lb
<b>Upper Bleachery Building No. 134</b>				
37	Empties	55	Assorted Drums	Gal
38	Sodium Silicate	55	Metal Drum	Gal
39	Serasperse SS600	625	Plastic Drum	lb
40	Glycerin 99.7 %- 100%	2,750	Plastic Tote	lb
41	Mykon HD	450	Plastic Drums	lb
42	Amihold 1140	593	Plastic Drums	lb
43	Citric Acid	2,000	Pallet - Bags	lb
44	Organic Soap	2,000	Pallet - Bags	lb
45	Vegetable Soap	2,000	Pallet - Bags	lb
46	Vegetable Soap	2,000	Pallet - Bags	lb
47	Idrosolvan-RD7	900	Plastic Drums	lb
48	Permulsin-AO300	1,000	Plastic Drums	lb
49	EvoSoft SFBM	880	Plastic Drums	lb
50	SetilonKNL	287	Plastic Drums	lb
51	Amihold 1140	593	Plastic Drum	lb
52	Mykon HD	450	Plastic Drum	lb
53	Serasperse SS600	625	Plastic Drum	lb
54	EvoSoft SFBM	440	Plastic Drum	lb
55	Vegetable Soap	2,000	Pallet - Bags	lb
56	Glycerin 99.7 %- 100%	2,750	Plastic Tote	lb
<b>Ant Hill and Pump House</b>				
57	Hydrogen Peroxide	10,000	304SS	Gal
58	Chemical Storage Shed	-	-	-
58(a)	Methanol - UN 1230	8	4L Glass Bottle	L
58(b)	Ethyl Ether Anhydrous	8	4L Glass Bottle	L
58(c)	2 Propanol	8	4L Glass Bottle	L

Gal = Gallons

lbs = Pounds

L = Liter

304SS = Stainless Steel

**APPENDIX D**  
**SAFETY DATA SHEETS**

# SAFETY DATA SHEET

Creation Date 01-September-2009

Revision Date 18-January-2018

Revision Number 4

## 1. Identification

**Product Name** 2-Propanol

**Cat No. :** A426F-1GAL; A426P-4; A426S-4; A426S-20; A426S-200

**CAS-No** 67-63-0

**Synonyms** 2-Propanol; IPA; Isopropyl alcohol; Propan-2-ol; Isopropanol

**Recommended Use** Laboratory chemicals.

**Uses advised against** Not for food, drug, pesticide or biocidal product use

### Details of the supplier of the safety data sheet

#### Company

##### **Importer/Distributor**

Fisher Scientific  
112 Colonnade Road,  
Ottawa, ON K2E 7L6,  
Canada  
Tel: 1-800-234-7437

##### **Manufacturer**

Fisher Scientific  
One Reagent Lane  
Fair Lawn, NJ 07410  
Tel: (201) 796-7100

#### **Emergency Telephone Number**

CHEMTREC®, Inside the USA: 800-424-9300

CHEMTREC®, Outside the USA: 001-703-527-3887

## 2. Hazard(s) identification

### Classification

#### **WHMIS 2015 Classification**

Classified as hazardous under the Hazardous Products Regulations (SOR/2015-17)

<b>Flammable liquids</b>	Category 2
<b>Serious Eye Damage/Eye Irritation</b>	Category 2
<b>Specific target organ toxicity (single exposure)</b>	Category 3
Target Organs - Respiratory system, Central nervous system (CNS).	
<b>Specific target organ toxicity - (repeated exposure)</b>	Category 2
Target Organs - Kidney, Liver.	

### Label Elements

#### **Signal Word**

Danger

#### **Hazard Statements**

Highly flammable liquid and vapor  
Causes serious eye irritation  
May cause respiratory irritation  
May cause drowsiness and dizziness  
May cause damage to organs through prolonged or repeated exposure



**Precautionary Statements****Prevention**

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking

Keep container tightly closed

Ground/bond container and receiving equipment

Use explosion-proof electrical/ventilating/lighting/equipment

Use only non-sparking tools

Take precautionary measures against static discharges

Do not breathe dust/fumes/gas/mist/vapours/spray

Wash face, hands and any exposed skin thoroughly after handling

Use only outdoors or in a well-ventilated area

Wear protective gloves/protective clothing/eye protection/face protection

**Response**

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower

IF INHALED: Remove person to fresh air and keep comfortable for breathing

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

Call a POISON CENTER/ doctor if you feel unwell

In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish

**Storage**

Store in a well-ventilated place. Keep container tightly closed

Store locked up

**Disposal**

Dispose of contents/container to an approved waste disposal plant

**3. Composition/Information on Ingredients**

Component	CAS-No	Weight %
Isopropyl alcohol	67-63-0	>95

**4. First-aid measures**

<b>Eye Contact</b>	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
<b>Skin Contact</b>	Wash off immediately with plenty of water for at least 15 minutes. Get medical attention if symptoms occur.
<b>Inhalation</b>	Move to fresh air. Obtain medical attention. If not breathing, give artificial respiration.
<b>Ingestion</b>	Do not induce vomiting. Obtain medical attention.
<b>Most important symptoms/effects</b>	Breathing difficulties. May cause central nervous system depression: Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting
<b>Notes to Physician</b>	Treat symptomatically

**5. Fire-fighting measures**

<b>Suitable Extinguishing Media</b>	CO <sub>2</sub> , dry chemical, dry sand, alcohol-resistant foam. Cool closed containers exposed to fire with water spray.
<b>Unsuitable Extinguishing Media</b>	Water may be ineffective
<b>Flash Point</b>	12 °C / 53.6 °F
<b>Method -</b>	Abel Closed Cup (BS 2000 Part 170, IP 170, AS/NZS 2106)
<b>Autoignition Temperature</b>	425 °C / 797 °F
<b>Explosion Limits</b>	
<b>Upper</b>	12 vol %
<b>Lower</b>	2 vol %
<b>Sensitivity to Mechanical Impact</b>	No information available
<b>Sensitivity to Static Discharge</b>	No information available

**Specific Hazards Arising from the Chemical**

Flammable. Risk of ignition. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Containers may explode when heated.

**Hazardous Combustion Products**

Carbon monoxide (CO) Carbon dioxide (CO<sub>2</sub>) peroxides

**Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

**NFPA**

**Health**  
2

**Flammability**  
3

**Instability**  
0

**Physical hazards**  
N/A

## 6. Accidental release measures

<b>Personal Precautions</b>	Use personal protective equipment. Remove all sources of ignition. Take precautionary measures against static discharges. Avoid contact with skin, eyes and clothing.
<b>Environmental Precautions</b>	Should not be released into the environment. See Section 12 for additional ecological information.
<b>Methods for Containment and Clean Up</b>	Prevent further leakage or spillage if safe to do so. Remove all sources of ignition. Soak up with inert absorbent material. Take precautionary measures against static discharges. Use spark-proof tools and explosion-proof equipment. Keep in suitable, closed containers for disposal.

## 7. Handling and storage

<b>Handling</b>	Wear personal protective equipment. Keep away from open flames, hot surfaces and sources of ignition. Use explosion-proof equipment. Use only non-sparking tools. Take precautionary measures against static discharges. Do not get in eyes, on skin, or on clothing. Do not breathe vapors or spray mist. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded.
<b>Storage</b>	Keep away from heat and sources of ignition. Flammables area. Keep container tightly closed in a dry and well-ventilated place.

## 8. Exposure controls / personal protection

**Exposure Guidelines**

Component	Alberta	British Columbia	Ontario TWAEV	Quebec	ACGIH TLV	OSHA PEL	NIOSH IDLH
Isopropyl alcohol	TWA: 200 ppm TWA: 492	TWA: 200 ppm STEL: 400 ppm	TWA: 200 ppm STEL: 400 ppm	TWA: 400 ppm TWA: 985	TWA: 200 ppm STEL: 400 ppm	(Vacated) TWA: 400 ppm	IDLH: 2000 ppm TWA: 400 ppm

	mg/m <sup>3</sup> STEL: 400 ppm STEL: 984 mg/m <sup>3</sup>			mg/m <sup>3</sup> STEL: 500 ppm STEL: 1230 mg/m <sup>3</sup>		(Vacated) TWA: 980 mg/m <sup>3</sup> (Vacated) STEL: 500 ppm (Vacated) STEL: 1225 mg/m <sup>3</sup> TWA: 400 ppm TWA: 980 mg/m <sup>3</sup>	TWA: 980 mg/m <sup>3</sup> STEL: 500 ppm STEL: 1225 mg/m <sup>3</sup>
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**Legend**

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

**Engineering Measures**

Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment. Ensure adequate ventilation, especially in confined areas.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

**Personal protective equipment****Eye Protection**

Goggles

**Hand Protection**

Wear appropriate protective gloves and clothing to prevent skin exposure.

Glove material	Breakthrough time	Glove thickness	Glove comments
Butyl rubber	> 480 minutes	0.5 mm	Permeation rate < 0.9 µg/cm <sup>2</sup> /min
Nitrile rubber	> 360 - 480 minutes	0.35 - 0.55 mm	As tested under EN374-3 Determination of Resistance to Permeation by Chemicals

Inspect gloves before use. observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. gloves with care avoiding skin contamination.

**Respiratory Protection**

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

**Recommended Filter type:** Organic gases and vapours filter Type A Brown conforming to EN14387

When RPE is used a face piece Fit Test should be conducted

**Environmental exposure controls**

No information available.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use. Wash hands before breaks and at the end of workday.

## 9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	Alcohol-like
Odor Threshold	No information available
pH	7 1% aq. sol
Melting Point/Range	-89.5 °C / -129.1 °F

Boiling Point/Range	81 - 83 °C / 177.8 - 181.4 °F @ 760 mmHg
Flash Point	12 °C / 53.6 °F
Method -	Abel Closed Cup (BS 2000 Part 170, IP 170, AS/NZS 2106)
Evaporation Rate	1.7
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	12 vol %
Lower	2 vol %
Vapor Pressure	43 mmHg @ 20 °C
Vapor Density	2.1 @ 20 °C / 68 °F
Specific Gravity	0.785
Solubility	Miscible with water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	425 °C / 797 °F
Decomposition Temperature	No information available
Viscosity	2.27 mPa.s at 20 °C
Molecular Formula	C3 H8 O
Molecular Weight	60.1
VOC Content(%)	100% (Organic Carbon (by mass) = 59.9 %) (EC/1999/13)
Refractive index	1.377 at 20 °C / 68 °F (ASTM D-1218)
Surface tension	22.7 mN/m at 20 °C / 68 °F
Coefficient of expansion	0.0009 / °C
Dielectric constant	18.6 at 20 °C / 68 °F
Heat of vapourisation	665 J/g
Specific heat capacity	3 kJ/kg °C at 20 °C / 68 °F
Thermal conductivity	0.137 W/m °C at 20 °C / 68 °F

## 10. Stability and reactivity

Reactive Hazard	None known, based on information available
Stability	Stable under normal conditions.
Conditions to Avoid	Heat, flames and sparks. Keep away from open flames, hot surfaces and sources of ignition.
Incompatible Materials	Strong oxidizing agents, Acids, Halogens, Acid anhydrides
Hazardous Decomposition Products	Carbon monoxide (CO), Carbon dioxide (CO <sub>2</sub> ), peroxides
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

## 11. Toxicological information

### Acute Toxicity

#### Product Information Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Isopropyl alcohol	5840 mg/kg ( Rat )	13900 mg/kg ( Rat ) 12870 mg/kg ( Rabbit )	72.6 mg/L ( Rat ) 4 h

Toxicologically Synergistic Products No information available

#### Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation	Irritating to eyes and skin
Sensitization	No information available

**Carcinogenicity** The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Isopropyl alcohol	67-63-0	Not listed	Not listed	Not listed	Not listed	Not listed

**Mutagenic Effects** No information available

**Reproductive Effects** No information available.

**Developmental Effects** No information available.

**Teratogenicity** No information available.

**STOT - single exposure** Respiratory system Central nervous system (CNS)

**STOT - repeated exposure** Kidney Liver

**Aspiration hazard** No information available

**Symptoms / effects, both acute and delayed** May cause central nervous system depression: Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

**Endocrine Disruptor Information** No information available

**Other Adverse Effects** The toxicological properties have not been fully investigated.

## 12. Ecological information

### Ecotoxicity

. Do not empty into drains.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Isopropyl alcohol	EC50: > 1000 mg/L, 72h (Desmodesmus subspicatus) EC50: > 1000 mg/L, 96h (Desmodesmus subspicatus)	LC50: > 1400000 µg/L, 96h (Lepomis macrochirus) LC50: = 9640 mg/L, 96h flow-through (Pimephales promelas) LC50: = 11130 mg/L, 96h static (Pimephales promelas)	= 35390 mg/L EC50 Photobacterium phosphoreum 5 min	13299 mg/L EC50 = 48 h 9714 mg/L EC50 = 24 h

**Persistence and Degradability** Persistence is unlikely based on information available.

**Bioaccumulation/ Accumulation** No information available.

**Mobility** Will likely be mobile in the environment due to its volatility.

Component	log Pow
Isopropyl alcohol	0.05

## 13. Disposal considerations

**Waste Disposal Methods** Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

## 14. Transport information

### DOT

UN-No UN1219  
 Proper Shipping Name Isopropanol  
 Hazard Class 3  
 Packing Group II

### TDG

UN-No UN1219  
 Proper Shipping Name ISOPROPANOL  
 Hazard Class 3  
 Packing Group II

**IATA**

UN-No UN1219  
 Proper Shipping Name Isopropanol  
 Hazard Class 3  
 Packing Group II

**IMDG/IMO**

UN-No UN1219  
 Proper Shipping Name Isopropanol (Isopropyl alcohol)  
 Hazard Class 3  
 Packing Group II

## 15. Regulatory information

All of the components in the product are on the following Inventory lists: X = listed

**International Inventories**

Component	DSL	NDSL	TSCA	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Isopropyl alcohol	X	-	X	200-661-7	-		X	X	X	X	X

**Canada**

SDS in compliance with provisions of information as set out in Canadian Standard - Part 4, Schedule 1 and 2 of the Hazardous Products Regulations (HPR) and meets the requirements of the HPR (Paragraph 13(1)(a) of the Hazardous Products Act (HPA)).

Component	Canada - National Pollutant Release Inventory (NPRI)	Canadian Environmental Protection Agency (CEPA) - List of Toxic Substances	Canada's Chemicals Management Plan (CEPA)
Isopropyl alcohol	Part 1, Group A Substance Part 5, Individual Substances		

## 16. Other information

**Prepared By** Regulatory Affairs  
 Thermo Fisher Scientific  
 Email: EMSDS.RA@thermofisher.com

**Creation Date** 01-September-2009

**Revision Date** 18-January-2018

**Print Date** 18-January-2018

**Revision Summary** This document has been updated to comply with the requirements of WHMIS 2015 to align with the Globally Harmonised System (GHS) for the Classification and Labelling of Chemicals.

**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

**End of SDS**



# Safety Data Sheet

## Amihold 1140 Conc

### HMIS Hazard Codes

Health	1
Flammability	0
Reactivity	0

Revision Date: 20 April 2015

Print Date: 27 April 2015

### SECTION 1 – IDENTIFICATION

**Product Name:** Amihold 1140 Conc

**Formula:** Proprietary. In the event of a medical emergency, composition information will be provided to a Physician or Nurse.

**Manufacturer:** Apollo Chemical  
2001 Willow Springs Lane  
Burlington, NC 27215  
Phone : (336)226-1161  
Fax : (336)570-6246

**Chemical Family:** Textile Anti-Slip Agent

#### 24 Hour Emergency Contact Information:

CHEMTREC: Within USA & Canada (800)424-9300

**APOLLO:** Outside USA & Canada

Gary Dagenhart: (864)323-2172

Warren Roberts: (704)460-5303

### SECTION 2 – HAZARD(S) IDENTIFICATION

#### GHS Classification:

Health	Environmental	Physical
Skin Irritation: Category 3 Eye Irritation: Category 2B Acute Toxicity Oral: Category 5	None Listed	None Listed

#### GHS product labeling:

**GHS Label Pictogram(s):**

No Symbol Required

**Signal Word(s):**

Warning

**GHS Hazard Statement(s):**

H316: Causes mild skin irritation

H320: Causes eye irritation

H303: May be harmful if swallowed

**GHS Precautionary Statement(s):**

P103: Read label before use

P332 + P313: If skin irritation occurs, get medical attention

P264: Wash hands thoroughly after handling.

P305+P351+P338: If in eyes, rinse cautiously with water for several minutes. Remove contact lenses if easy to do.

P337 + P313: If eye irritation persists, get medical attention.

P313: Contact a doctor or poison control center if product is swallowed.

**Hazard Statement(s)**



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**Route of Entry:** Absorption, Inhalation, Ingestion

**Target Organs:** Eyes, Skin

### Acute Effects

**Route of Entry:** Absorption, Inhalation, Ingestion

**Inhalation:** Not expected to be a relevant route of exposure. However, high vapor or aerosol mist concentrations may be irritating to the nose, throat and upper respiratory tract.

**Eye Contact:** This industrial-use chemical may cause eye irritation. Symptoms may include inflammation, redness and tearing.

**Skin Contact:** Prolonged or repeated contact with the undiluted product may be irritating to the skin. Symptoms may include redness and burning of the skin and other skin damage.

**Ingestion:** Ingestion may cause gastrointestinal irritation. Symptoms may include abdominal discomfort, nausea, vomiting and diarrhea.

### Chronic Effects

No Product Information is available

**IARC / NTP / OSHA:** Components present at 0.1% or more – None unless listed below:

\*HMIS Hazard ratings involve data interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, consider all available information.

Hazard Rating Scale: Minimal = 0, Slight = 1, Moderate = 2, Serious = 3, Severe = 4, an \* besides Health indicates a Chronic Hazard

### Precautionary statement(s)

Do not take internally. Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Avoid contact with the eyes, skin and clothing. Avoid breathing dust, vapor or mist. Wear appropriate chemical protective clothing and equipment. Always wash thoroughly after handling. Launder contaminated clothing before reuse. Avoid release to the environment.

## SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS

CAS Number	Component	Percent
Proprietary.....	Silica Blend	

The chemical identity of some or all components present is confidential business information (Trade Secret) and is being withheld as permitted by 29CFR1910.1200 (i)

This SDS contains valuable information critical to the safe handling and proper use of this product. This SDS should be retained and available for employees and other users of this product.

## SECTION 4 – FIRST-AID MEASURES

**Inhalation:** If respiratory symptoms develop, move victim from contaminated area to fresh air. If not breathing, apply artificial respiration, preferably by mechanical means. Avoid direct mouth to mouth resuscitation. If symptoms persist, obtain medical attention immediately.

**Skin Contact:** Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated





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	clothing. Wash with plenty of soap and water including hair and under fingernails. Do not apply any medicated agents except on the advice from a physician. Get medical attention if needed.
<b>Eye Contact:</b>	Immediately flush eyes with large amounts of running water for at least 15 minutes, holding eyelids apart to facilitate irrigation of the entire surface of the eyes and lids. Do not apply any medicated agents except on the advice of a physician. Get immediate medical attention.
<b>Ingestion:</b>	DO NOT INDUCE VOMITING OR ADMINISTER EMETICS EXCEPT ON THE ADVICE FROM A PHYSICIAN. If victim is fully conscious, give 2 - 3 glasses of water to drink. Contact a physician, hospital or Poison Control Center immediately. Do not give anything by mouth to an unconscious person. To ensure airway is open, position with head lower than body and transport immediately to a medical facility.

### SECTION 5 – FIRE-FIGHTING MEASURES

<b>Flash Point ( ° F):</b>	Not Determined
<b>Flash Point Method:</b>	Test Method ASTM D56-98a Tag closed Cup
<b>Autoignition Temperature ( ° F):</b>	No test data available
<b>Lower Explosion Limit (%):</b>	No test data available
<b>Upper Explosion Limit (%):</b>	No test data available
<b>Flammability Classification:</b>	Not applicable
<b>Extinguishing Media:</b>	Dry powder, foam, carbon dioxide, water or water mist. Wear self contained breathing apparatus and other protective clothing. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion.
<b>Special Fire Fighting Procedures:</b>	Not Applicable
<b>Unusual Fire and Explosion Hazards:</b>	Closed container may rupture (due to build up in pressure) when exposed to extreme heat. None known for the product as delivered. Irritating and toxic substance may be emitted upon combustion, burning or decomposition of the dry solids.

### SECTION 6 – ACCIDENTAL RELEASE MEASURES

<b>Small Spill:</b>	Wear chemical safety glasses with side shields or chemical goggles and heavy rubber gloves. Absorb in vermiculite, sand, floor sweeping compound or other absorbent material. Place in container for chemical waste. Do not discharge to drains or surface water. (see also section 8)
<b>Large Spill:</b>	Remove unprotected personnel from spill area until cleanup is complete. Stop spill at source and dike area to prevent spreading. Collect excess material and transfer to chemical waste containers. Do not discharge to drains or surface water. (see also section 8)
<b>Waste disposal:</b>	Dispose of product in an approved chemical waste landfill or incinerate in accordance with applicable Federal, State and Local regulations. (see also section 13)



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### HMIS Hazard Codes

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### SECTION 7 – HANDLING AND STORAGE

<b>Handling Precautions:</b>	Do not take internally. Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Avoid contact with the eyes, skin and clothing. Avoid breathing dust, vapor or mist. Wear appropriate chemical protective clothing and equipment. Always wash thoroughly after handling. Launder contaminated clothing before reuse. Avoid release to the environment. Open and handle the containers with care.
<b>Storage Requirements:</b>	Avoid areas of excessive heat. Keep from freezing. Keep container closed when not in use. Store only in approved containers and in a well-ventilated area away from incompatible materials.

### SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>Engineering Controls:</b>	Use Mechanical (general) ventilation for storage areas. All ventilation should be designed in accordance with OSHA standard (29 CFR 1910.94).
<b>Protective Equipment:</b>	HMIS PPE: X Ask supervisor or safety specialist for handling instructions
	Eye and Skin Protections: Wear gloves that are chemically resistant to the material. Wear approved eye protection.
	Respiratory Protections: Where there is a potential for airborne exposures, wear NIOSH approved respiratory protections.
	Other Protective Equipment: A deluge safety shower and eye wash station must be located near the work area.
	Hygienic Practices: Avoid contact with eyes, skin and clothing. Avoid inhalation of contaminant. Wash thoroughly after handling. Do not eat, drink, use tobacco products, chew gum or apply cosmetics in area where there is a potential for exposure to the material.
	Each Company should review the protective equipment and engineering controls based on individual needs and situations to insure the safe handling of each product.

### Occupational Exposure Value(s)

Chemical name (CAS #)	ACGIH (TWA)	ACGIH (STEL)	OSHA (TWA)	OSHA (STEL)

Comments: (S) = Skin, (C) = Ceiling

### SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	Clear to hazy	<b>Boiling Point ( ° C ):</b>	> 212 ° F
<b>Physical State:</b>	Liquid	<b>Melting Point ( ° C ):</b>	Not Determined
<b>Odor:</b>	None	<b>Water Solubility:</b>	Complete
<b>(as is) pH:</b>	9.5 – 9.9	<b>Specific Gravity (H<sub>2</sub>O = 1):</b>	1.29



**APOLLO**  
CHEMICAL

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Vapor Pressure:	Not Available
Vapor Density:	Estimated heavier than air
VOC (%):	Not Determined
Evaporation Rate:	Slower than Butyl Acetate
Flash Point ( ° F):	> 200 ° F
Partition coefficient (n-octanol/water):	Not Determined

Density (lbs / gal):	10.76
Percent Solids (%):	Not Determined
Charge Nature:	Not Determined
Molecular Weight:	Not Applicable / Mixture
Viscosity:	Not Determined
Decomposition Temperature:	Not Determined

### SECTION 10 – STABILITY AND REACTIVITY

Stability :	This product is stable under normal conditions.
Conditions to Avoid :	Avoid areas of excessive heat.
Materials to Avoid (Incompatibilities) :	Avoid contact with strong bases and acids. Avoid contact with strong oxidizing agents.
Hazardous Decomposition products :	Combustion may produce oxides of Silicon.
Hazardous Polymerization :	Is not expected to occur.

### SECTION 11 – TOXICOLOGICAL INFORMATION

#### General:

#### Acute Effects:

**Eye Contact:** There is no test data or experience indicating eye irritation, this product, like all industrial-use chemicals, may cause eye irritation. Users should apply appropriate industrial chemical hygiene practices and avoid eye exposure.

**Skin contact:** Prolonged or repeated contact with the undiluted product may be irritating to the skin. Symptoms may include redness and burning of the skin and other skin damage.

**Inhalation:** Not expected to be a relevant route of exposure. However, high vapor or aerosol mist concentrations may be irritating to the nose, throat and upper respiratory tract.

**Ingestion:** Ingestion may cause gastrointestinal irritation. Symptoms may include abdominal discomfort, nausea, vomiting and diarrhea.

#### Product Information:

#### Acute Toxicity:

LD<sub>50</sub> Oral: > 15,380 mg/kg (Rat)

LD<sub>50</sub> Dermal: No product data is available

LC<sub>50</sub> Inhalation: No product data is available

Skin corrosion/irritation: Expected to be a mild irritant - No product data is available

Serious eye damage/irritation: Expected to be a mild irritant - No product data is available

Aspiration hazard: Not expected to be an aspiration hazard – No product data is available



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#### Chronic Toxicity:

Respiratory or skin sensitization: Not expected to be sensitizer - No product data is available

Germ Cell mutagenicity: Not expected to be a mutagen - No product data is available

Carcinogenicity: Not expected to be a carcinogen - No product data is available

Reproductive toxicity: Not expected to be a reproductive toxin - No product data is available

STOT-single exposure: No product data is available

STOT-repeated exposure: No product data is available

IARC / NTP / OSHA: Components present at 0.1% or more – None unless listed below:

Comments: Not Applicable

### SECTION 12 – ECOLOGICAL INFORMATION

General: Ecotoxicity: (see below)

LC<sub>50</sub>: > 1,000 mg/kg (Rainbow Trout)

EC<sub>50</sub>: > 1,000 mg/kg (Bluegill Sunfish)

Persistence and degradability: (see below)

COD: 5,470 mg/L

BOD<sub>5</sub>: 7.0 mg/L

Biodegradability: No product data is available

Octanol/Water Partition coefficient: No product data is available

Bioaccumulative potential: No product data is available

Mobility in soil: No product data is available

Comments: Not Applicable

### SECTION 13 – DISPOSAL CONSIDERATIONS

**Empty Container:** "Empty" containers retain product residue (liquid and/or vapor) and can be hazardous. Empty drums should be completely drained, properly bunged and properly returned to a drum reconditioner or properly disposed of. Dispose of in accordance with applicable Federal, State and Local regulations.

**Waste Disposal:** Dispose of drum, product or rinsing in accordance with applicable Federal, State and Local regulations.

### SECTION 14 - TRANSPORT INFORMATION

#### UNITED STATES DOT GROUND (49 CFR)

Proper Shipping Name: Not Regulated

Technical Name:



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Hazard Class:

ID Number:

Packaging Group:

ERG Guide:

Reportable Quantity (RQ):

Other:

### WATER TRANSPORTATION (IMO / IMDG)

Proper Shipping Name: Not Regulated

Technical Name:

Hazard Class:

ID Number:

Packaging Group:

EmS Guide:

Reportable Quantity (RQ):

### AIR TRANSPORTATION (ICAO / IATA)

Proper Shipping Name: Not Regulated

Technical Name:

Hazard Class:

ID Number:

Packaging Group:

ERG Guide:

The transport information provided represents the regulatory transport classification of the product without consideration to packaging, quantity, or modal restrictions and exceptions. It is the user's responsibility to determine the appropriate packaging and modal requirements and/or limitations for the product quantity being shipped.

## SECTION 15 - REGULATORY INFORMATION

### US FEDERAL REGULATIONS

#### Toxic Substances Control Act (TSCA)

All components of this product are listed on the TSCA Inventory or are exempt from TSCA Inventory requirements.

#### TSCA 12(b) Export Notification Rule

The following component(s) of this product are listed under the TSCA 12(b) Export Notification rule and are present at levels which could require reporting :

No component(s) listed

#### CERCLA, Sections 102a / 103



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If the reportable quantity of this product is accidentally spilled, the incident is subject to the provisions of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and must be reported to the National Response Center by calling (800)424-8802.

The following component(s) are specifically listed as hazardous substances in 40 CFR 302.4 and are present at levels which could require reporting :

**No component(s) listed**

**SARA, section 302 requires emergency planning based on Threshold Planning Quantities (TPQ's) and release reporting based on reportable quantities (RQ's)**

The following components of this product are listed as extremely hazardous substances in 40 CFR Part 355.30 and are present at levels which could require reporting and emergency planning :

**No component(s) listed**

**SARA, Section 304 requires emergency planning based on Threshold Planning Quantities (TPQ's) and release reporting based on reportable Quantities (RQ's)**

The following components of this product are present at levels which could require reporting and emergency planning under 40 CFR Part 355.40 :

**No component(s) listed**

**SARA, Section 313 requires submission of annual reports of release of toxic chemicals**

The following components of this product are listed as toxic chemicals in 40 CFR 372.65 and are present at levels which could require reporting and customer notification under Sections 313 and 40 CFR Part 372 :

**No component(s) listed**

**Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs)**

The following components of this product are listed as Hazardous Air Pollutants:

**No component(s) listed**

**RCRA Status**

Discarded product, as sold, would not be considered a RCRA Hazardous Waste. Under RCRA, it is the responsibility of the user to determine, at the time of the disposal, whether the product would meets RCRA criteria as a hazardous waste. This is because product uses, transformations, mixtures, processes, etc. may render the resulting materials hazardous.

**EPA Hazard Categorization:**

Immediate Health Hazard : Yes

Delayed Hazard : No

Fire Hazard : No

Reactive Hazard : No

Sudden Release of Pressure Hazard : No

## STATE REGULATIONS



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Reactivity	0

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**California Proposition 65 :** This product contains no levels of listed substances, which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute, *unless specifically listed*. **No component(s) listed**

**USA State Right to Know :** **No component(s) listed**

**Comments :** MA : Massachusetts Hazardous Substance list  
PA : Pennsylvania Right to know list of Hazardous Substances  
NJ : New Jersey Hazardous Substance list  
CA: California Hazardous Substance list

### INTERNATIONAL REGULATIONS

COUNTRY	REGULATORY LIST	NOTIFICATION
Canada	DSL / NDSL	Not Determined
EU	EINECS / ELINCS / NLP	Not Determined
Australia	AICS	Not Determined
Japan	ENCS	Not Determined
China	CEPA/IECSC	Not Determined
South Korea	ECL/KECI	Not Determined
Philippines	PICCS	Not Determined
New Zealand	NZIoC	Not Determined

### ADDITIONAL INFORMATION

Canadian WHMIS Classification:	Not Determined
Canadian Ingredient Disclosure List :	<b>No component(s) listed</b>
German Consumer Protection Act :	Acceptable
Oeko – Tex Standard 100 :	Acceptable

### SECTION 16 – OTHER INFORMATION

**Reason Date:** April 20, 2015

**Revision Type:** New Format

**Disclaimer:** All information, recommendations and suggestions appearing herein are based upon data believed to be reliable. However, it is the user's responsibility to determine the safety and suitability of this product for their own use. Since the actual use by others is beyond our control, **Mount Vernon Chemicals LLC** makes no guarantee or warranty, express or implied, with respect to the effect of such use, or the safety or toxicity of this product. **Mount Vernon Chemicals LLC** does not assume any liability arising out of the use of this product by others.

END OF SDS





# Glycerine 99.7% USP Kosher

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision Date: 12/17/2013

Supersedes: 10/21/2013

Version: 1.0

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY

### 1.1. Product Identifier

**Product Form:** Substance

**Product Name:** Glycerine 99.7% USP Kosher

**CAS No:** 56-81-5

**Formula:** C<sub>3</sub>H<sub>8</sub>O<sub>3</sub>/C<sub>3</sub>H<sub>5</sub>(OH)<sub>3</sub>

**Synonyms:** 1,2,3-Propanetriol; Glycerol; Glycerin

### 1.2. Intended Use of the Product

**Use of the substance/mixture:** NF Excipient

### 1.3. Name, Address, and Telephone of the Responsible Party

#### Company

Acme-Hardesty Co.

450 Sentry Parkway

Blue Bell, PA 19422

T 866-226-3834 T 215-591-3610

www.acme-hardesty.com

### 1.4. Emergency Telephone Number

**Emergency Number :** 800-424-9300

For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident, call CHEMTREC – Day or Night

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1. Classification of the Substance or Mixture

**Classification (GHS-US)**

Not classified

### 2.2. Label Elements

**GHS-US Labeling**

Not applicable

### 2.3. Other Hazards

No additional information available

### 2.4. Unknown Acute Toxicity (GHS-US):

No data available

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1. Substances

Name	Product Identifier	%	Classification (GHS-US)
Glycerin	(CAS No) 56-81-5	99.7	Not classified

Full text of H-phrases: see section 16

### 3.2. Mixtures

Not applicable

Full text of H-phrases: see section 16

## SECTION 4: FIRST AID MEASURES

### 4.1. Description of First Aid Measures

**First-aid Measures General:** Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

**First-aid Measures After Inhalation:** When symptoms occur: go into open air and ventilate suspected area.

**First-aid Measures After Skin Contact:** Remove contaminated clothing. Drench affected area with water for at least 15 minutes.

**First-aid Measures After Eye Contact:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.



# Glycerine 99.7% USP Kosher

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**First-aid Measures After Ingestion:** Rinse mouth. Do NOT induce vomiting.

### 4.2. Most important symptoms and effects, both acute and delayed

**Symptoms/Injuries:** None expected under normal conditions of use.

**Symptoms/Injuries After Inhalation:** Not expected to present a significant inhalation hazard under anticipated conditions of normal use.

**Symptoms/Injuries After Skin Contact:** None under normal conditions.

**Symptoms/Injuries After Eye Contact:** Direct contact with the eyes is likely irritating.

**Symptoms/Injuries After Ingestion:** If a large quantity has been ingested: May cause nausea, vomiting, and diarrhea.

### 4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If medical advice is needed, have product container or label at hand.

## SECTION 5: FIREFIGHTING MEASURES

### 5.1. Extinguishing Media

**Suitable Extinguishing Media:** Use extinguishing media appropriate for surrounding fire. Water spray or fog, dry chemical powder, alcohol-resistant foam, carbon dioxide (CO<sub>2</sub>).

**Unsuitable Extinguishing Media:** None known.

### 5.2. Special Hazards Arising From the Substance or Mixture

**Fire Hazard:** Not flammable.

**Explosion Hazard:** Product is not explosive.

**Reactivity:** Stable at ambient temperature and under normal conditions of use.

### 5.3. Advice for Firefighters

**Firefighting Instructions:** Exercise caution when fighting any chemical fire.

**Protection During Firefighting:** Do not enter fire area without proper protective equipment, including respiratory protection.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### 6.1. Personal Precautions, Protective Equipment and Emergency Procedures

**General Measures:** Handle in accordance with good industrial hygiene and safety practice.

#### 6.1.1. For Non-emergency Personnel

**Protective Equipment:** Use appropriate personal protection equipment (PPE).

**Emergency Procedures:** Evacuate unnecessary personnel.

#### 6.1.2. For Emergency Responders

**Protective Equipment:** Equip cleanup crew with proper protection.

**Emergency Procedures:** Ventilate area.

### 6.2. Environmental Precautions

Prevent entry to sewers and public waters.

### 6.3. Methods and Material for Containment and Cleaning Up

**For Containment:** Absorb and/or contain spill with inert material, then place in suitable container.

**Methods for Cleaning Up:** Clear up spills immediately and dispose of waste safely.

### 6.4. Reference to Other Sections

See heading 8, Exposure Controls and Personal Protection.

## SECTION 7: HANDLING AND STORAGE

### 7.1. Precautions for Safe Handling

**Hygiene Measures:** Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work. Do not eat, drink or smoke when using this product.

### 7.2. Conditions for Safe Storage, Including Any Incompatibilities

**Storage Conditions:** Store in a dry, cool and well-ventilated place. Keep container closed when not in use.

**Incompatible Products:** Strong acids. Strong bases. Strong oxidizers.

### 7.3. Specific End Use(s) NF Excipient

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control Parameters

# Glycerine 99.7% USP Kosher

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according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Glycerin (56-81-5)		
USA OSHA	OSHA PEL (TWA) (mg/m3)	5 mg/m <sup>3</sup>

### 8.2. Exposure Controls

**Personal Protective Equipment** : Gloves. Safety glasses.



**Hand Protection** : Wear chemically resistant protective gloves. The breakthrough time of the selected gloves must be greater than the intended use period.

**Eye Protection** : Chemical goggles or safety glasses.

**Respiratory Protection** : In case of inadequate ventilation wear respiratory protection.

**Other Information** : When using, do not eat, drink or smoke.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on Basic Physical and Chemical Properties

Physical State	: Liquid
Appearance	: Colorless. Viscous.
Odor	: Characteristic.
Odor Threshold	: No data available
pH	: No data available
Relative Evaporation Rate (butylacetate=1)	: No data available
Melting Point	: 18 °C (64.4°C)
Freezing Point	: No data available
Boiling Point	: 290 °C (554°F) (decomposition)
Flash Point	: 177 °C (350.6°F) Cleveland Open Cup
Auto-ignition Temperature	: 400 °C (752°F)
Decomposition Temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor Pressure	: < 0.01 hPa
Relative Vapor Density at 20 °C	: No data available
Relative Density	: No data available
Specific Gravity	: 1.26 g/cm <sup>3</sup>
Solubility	: Fully miscible.
Log Pow	: No data available
Log Kow	: -1.76
Viscosity, Kinematic	: 1300 mPas @ 20 °C
Viscosity, Dynamic	: No data available
Explosive Properties	: No data available
Oxidizing Properties	: No data available
Explosive Limits	: Not applicable

### 9.2. Other Information

**VOC content** : ≤ 0.5 %

## SECTION 10: STABILITY AND REACTIVITY

**10.1 Reactivity:** Stable at ambient temperature and under normal conditions of use.

**10.2 Chemical Stability:** Product is stable.

**10.3 Possibility of Hazardous Reactions:** Hazardous polymerization will not occur.

# Glycerine 99.7% USP Kosher

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

**10.4 Conditions to Avoid:** Direct sunlight. Extremely high or low temperatures.

**10.5 Incompatible Materials:** Strong acids. Strong bases. Strong oxidizers.

**10.6 Hazardous Decomposition Products:** Under fire conditions this material may produce hazardous carbon dioxide (CO<sub>2</sub>), carbon monoxide (CO), various low molecular weight hydrocarbons, and smoke.

## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1. Information On Toxicological Effects

**Acute Toxicity** : Not classified

<b>Glycerin (56-81-5)</b>	
<b>LD50 Dermal Rabbit</b>	> 10 g/kg
<b>LC50 Inhalation Rat (mg/l)</b>	> 570 mg/m <sup>3</sup> (Exposure time: 1 h)
<b>ATE (Oral)</b>	12600.000 mg/kg

**Skin Corrosion/Irritation:** Not classified

**Serious Eye Damage/Irritation:** Not classified

**Respiratory or Skin Sensitization:** Not classified

**Germ Cell Mutagenicity:** Not classified

**Carcinogenicity:** Not classified

**Reproductive Toxicity:** Not classified

**Specific Target Organ Toxicity (Single Exposure):** Not classified

**Specific Target Organ Toxicity (Repeated Exposure):** Not classified

**Aspiration Hazard:** Not classified

**Symptoms/Injuries After Inhalation:** Not expected to present a significant inhalation hazard under anticipated conditions of normal use.

**Symptoms/Injuries After Skin Contact:** None under normal conditions.

**Symptoms/Injuries After Eye Contact:** Direct contact with the eyes is likely irritating.

**Symptoms/Injuries After Ingestion:** If a large quantity has been ingested: May cause nausea, vomiting, and diarrhea.

## SECTION 12: ECOLOGICAL INFORMATION

### 12.1. Toxicity

<b>Glycerin (56-81-5)</b>	
<b>LC50 Fish 1</b>	51 (51 - 57) ml/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [static])
<b>EC50 Daphnia 1</b>	> 500 mg/l (Exposure time: 24 h - Species: Daphnia magna)

### 12.2. Persistence and Degradability

<b>Glycerine 99.7% USP Kosher</b>	
<b>Persistence and Degradability</b>	The substance is biodegradable. Unlikely to persist.

### 12.3. Bioaccumulative Potential

<b>Glycerine 99.7% USP Kosher</b>	
<b>Log Pow</b>	-1.76
<b>Bioaccumulative Potential</b>	Based on the n-octanol/water partition coefficient accumulation in organisms is not expected.

<b>Glycerin (56-81-5)</b>	
<b>BCF fish 1</b>	(no bioaccumulation)
<b>Log Pow</b>	-1.76

**12.4. Mobility in Soil** No additional information available

### 12.5. Other Adverse Effects

**Other Information** : Avoid release to the environment.

## SECTION 13: DISPOSAL CONSIDERATIONS

### 13.1. Waste treatment methods

**Waste Disposal Recommendations:** Dispose of waste material in accordance with all local, regional, national, and international regulations.

# Glycerine 99.7% USP Kosher

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

### SECTION 14: TRANSPORT INFORMATION

In Accordance With ICAO/IATA/DOT/TDG

**14.1. UN Number** Not applicable

**14.2. UN Proper Shipping Name** Not regulated for transport.

**14.3. Additional Information**

**Other information** : No supplementary information available.

**Transport by Sea** Not regulated for transport.

**Air Transport** Not regulated for transport.

### SECTION 15: REGULATORY INFORMATION

#### 15.1 US Federal Regulations

Glycerin (56-81-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>EPA TSCA Regulatory Flag</b>	Y2 - Y2 - indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

#### 15.2 US State Regulations

Glycerin (56-81-5)
U.S. - Connecticut - Hazardous Air Pollutants - HLVs (30 min) U.S. - Connecticut - Hazardous Air Pollutants - HLVs (8 hr) U.S. - Idaho - Occupational Exposure Limits - TWAs U.S. - Massachusetts - Right To Know List U.S. - Michigan - Occupational Exposure Limits - TWAs U.S. - Minnesota - Hazardous Substance List U.S. - Minnesota - Permissible Exposure Limits - TWAs U.S. - New Hampshire - Regulated Toxic Air Pollutants - Ambient Air Levels (AALs) - 24-Hour U.S. - New Hampshire - Regulated Toxic Air Pollutants - Ambient Air Levels (AALs) - Annual U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - North Dakota - Air Pollutants - Guideline Concentrations - 8-Hour U.S. - Oregon - Permissible Exposure Limits - TWAs U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Tennessee - Occupational Exposure Limits - TWAs U.S. - Texas - Effects Screening Levels - Long Term U.S. - Texas - Effects Screening Levels - Short Term U.S. - Vermont - Permissible Exposure Limits - TWAs U.S. - Washington - Permissible Exposure Limits - STELs U.S. - Washington - Permissible Exposure Limits - TWAs

### SECTION 16: OTHER INFORMATION

**Other Information** : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

*The data herein are based on our current knowledge and believed to be reliable. Acme-Hardesty Co., provides this information without any representation or warranty, expressed or implied, regarding its accuracy or correctness.*

*Users must make their own determination that handling, storage, use and disposal of the product in the anticipated manner is safe and appropriate. Because these actions of the user are out of our control, and may be beyond our knowledge, we do not assume responsibility and expressly disclaim liability for loss, damage, expense or any other claim arising out of or in any way connected with the handling, storage, use or disposal of the product or container.*

SDS US (GHS HazCom) - US Only



24-HOUR EMERGENCY TELEPHONE

SPRAGUE: 603-431-1000

CHEMTREC: 800-424-9300

## SDS – SAFETY DATA SHEET

### 1. Identification

**Product Identifier:** ULTRA LOW SULFUR DIESEL FUEL # 2

**Synonyms:** HIGHWAY DIESEL FUEL OIL, #2, FUEL OIL (ULTRA LOW SULFUR DIESEL)

**Chemical Formula:** Not applicable to mixtures

**Recommended Use of the Chemical and Restrictions On Use:** Fuel

**Manufacturer / Supplier:** Sprague Operating Resources LLC

**Phone:** 603-431-1000

185 International Drive, Portsmouth, NH 03801

**Emergency Phone Number:** SPRAGUE: 603-431-1000; CHEMTREC: 800-424-9300

### 2. Hazard(s) Identification

**Classification of the Substance or Mixture:**

Flammable Liquids - Category 4

Carcinogenicity - Category 2

Specific Target Organ Toxicity (Single Exposure) – Category 3

Aspiration Hazard – Category 1

Acute Aquatic Toxicity – Category 3

**Risk Phrases:**

R40: Limited evidence of a carcinogenic effect.

R52: Harmful to aquatic organisms.

R65: Harmful: may cause lung damage if swallowed.

R67: Vapors may cause drowsiness and dizziness.

**Label Elements:**

**Trade Name:** ULTRA LOW SULFUR DIESEL FUEL # 2

**Signal Word:** Warning



**Hazard Statements:**

H227: Combustible liquid.

H304: May be fatal if swallowed and enters airways.

H336: May cause drowsiness or dizziness.

H351: Suspected of causing cancer.

H402: Harmful to aquatic life.

**Precautionary Statements:**

P261: Avoid breathing dust / fume / gas / mist / vapors / spray.

P281: Wear protective equipment as required.

P301 + 310: IF SWALLOWED: Immediately call a POISON CENTER or doctor / physician.

P331: Do NOT induce vomiting.

**3. Composition / Information on Ingredients**

**CAS Number:** Not applicable to mixtures

**EC Number:** Not applicable to mixtures

**Index Number:** Not applicable to mixtures

**Molecular Weight:** Not applicable to mixtures

Ingredient	CAS Number	Percent	Hazardous	Chemical Characterization
Fuel, Diesel	68476-34-6	99%	Yes	Substance
Polycyclic Hydrocarbons	08-007-452	< 1%	Yes	Substance

**4. First-aid Measures**

**Inhalation:** Remove from vapor to fresh air. If breathing has stopped, give artificial respiration. Get medical immediately.

**Ingestion:** DO NOT INDUCE VOMITING or give anything by mouth to an unconscious person. If more than 1 mg/kg of petroleum distillates are swallowed, remove by gastric lavage by qualified medical personnel. If vomiting occurs, keep person's head lower than hips to help prevent pulmonary aspiration. After vomiting stops, give 30-60 ml of Fleet's Phosphor-Soda diluted 1:4 in water. Get medical attention immediately.

**Skin Contact:** Remove contaminated clothing. Wipe off excess oil with a dry cloth and then wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes.) If irritation develops, seek medical aid.

**Eye Contact:** Check for and remove any contact lenses. Flush eyes immediately with large amounts of water, occasionally lifting upper and lower lids until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention if symptoms occur.

**5. Fire-fighting Measures**

**Fire:** Flammable Liquid and Vapor!

**Explosion:** Do not mix or store with strong oxidants. Do not store or pour near sources of ignition. Do not pressurize, cut, heat, weld, or expose empty containers to sources of ignition. Vapors are heavier than air and may travel a considerable distance to a source of ignition and flash back.

**Fire Extinguishing Media:** Foam, Carbon Dioxide, Dry Chemical, and for larger fires, Water Spray, Fog, or Foam.

**Special Information:** Use supplied-air breathing equipment for enclosed areas. Cool exposed containers with water spray. Continue water spray until entire container contents are cool. Withdraw immediately in the event of rising sound from venting safety device or any discoloration of storage tank due to fire (subject to the fire chief's directions.)

**6. Accidental Release Measures**

**Personal Precautions, Protective Equipment and Emergency Procedures:** No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment as per Section 8.



**Environmental Precautions and Methods and Materials for Containment and Cleaning Up:** Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Observe local, state and federal governmental spill and water quality regulations.

If properly trained, proceed with the following measures:

1. For small spills: Stop leak if without risk. Move containers from spill area. take up with sand or other absorbent material and place into containers for alter disposal.
2. For large spills: Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Dike far ahead of spill to prevent entrance into watercourses and / or ground water.

Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product.

## 7. Handling and Storage

### Precautions for Safe Handling and Conditions for Safe Storage, Including Any Incompatibilities:

Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Use appropriate containment to avoid environmental contamination.

## 8. Exposure Controls / Personal Protection

### Airborne Exposure Limits:

ACGIH Threshold Limit Value (TWA): 100 mg/m3 (measured as total hydrocarbons) 8 h (skin)

**Ventilation System:** Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):** A respirator is not needed under normal and intended conditions of use. If the exposure limit is exceeded and engineering controls are not feasible, use a mask with an organic vapor cartridge or positive pressure air supplied (SCBA) unit. Breathing air quality must meet the requirements of the OSHA respiratory protection standard (29CFR1910.134).

**Skin Protection:** Gloves – Neoprene, PVC. Disposable outer garments or impervious garments of equal or greater protection should be worn.

**Eye Protection:** Use chemical safety goggles and / or a full face shield where splashing is possible.

**Hygiene Measures:** Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

## 9. Physical and Chemical Properties

**Appearance:** Clear, slightly viscous liquid

**Odor:** Gasoline-like, diesel fuel odor

**Odor Threshold:** Not determined  
**pH:** No information found  
**% Volatiles by volume @ 21C (70F):** Greater than 50%  
**Melting Point:** Not determined  
**Boiling Point / Boiling Range:** 200 - 350C (392 - 662F) at 1,013 hPa (750 mm Hg)  
**Flash Point:** 50 - 80C (122 - 176F) Closed Cup  
**Evaporation Rate (BuAC=1):** Not determined  
**Flammability:** Combustible  
**Upper / Lower Flammability or Explosive Limits:** Upper - 10.0 / Lower - 0.6  
**Vapor Pressure (mm Hg):** 1 mm Hg @ 20C (68F)  
**Vapor Density (Air=1):** Greater than 5  
**Relative Density:** 0.86  
**Solubility:** Insoluble  
**Partition Coefficient: n-octanol / water:** Not determined  
**Auto-ignition Temperature:** > 260C (500F)  
**Decomposition Temperature:** Not determined  
**Viscosity:** Not determined

## 10. Stability and Reactivity

**Reactivity and / or Chemical Stability:** Stable under ordinary conditions of use and storage at normal temperatures and pressures.

**Possibility of Hazardous Reactions and Conditions to Avoid:** Heat, flames, ignition sources and incompatibles.

**Incompatible Materials:** Reactive or incompatible with oxidizing materials.

**Hazardous Decomposition Products:** Thermal decomposition may release various hydrocarbons and hydrocarbon derivatives including carbon dioxide, water, organic acids, and aldehydes.

## 11. Toxicological Information

**Emergency Overview:** WARNING! COMBUSTIBLE. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. HARMFUL IF INGESTED. ASPIRATION HAZARD.

Combustible liquid. Keep away from heat, sparks and flame. Avoid exposure - obtain special instructions before use. Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

### Potential Health Effects:

**Inhalation:** Mist or vapor may cause respiratory tract irritation. CNS depressant. High levels may cause giddiness, headache, dizziness, nausea, vomiting, and loss of coordination, narcosis, stupor, coma, and unconsciousness.

**Ingestion:** Irritation, giddiness, vertigo, headache, anesthetic stupor, CNS depression, coma and death.

**Skin Contact:** Drying, cracking, and defatting dermatitis. Direct contact may cause extreme irritation with severe erythema and edema with blistering and open sores. Absorption of large amounts may result in narcosis.

**Eye Contact:** Moderately irritating to eyes.

### Chronic Exposure:

**Inhalation:** Prolonged exposure may cause dizziness, weakness, weight loss, anemia, nervousness, and pain in the limbs, peripheral numbness, and paresthesia. Renal failure possible. Degenerative changes of liver and kidneys may occur after prolonged exposure to high concentrations.

**Skin Contact:** Repeated or prolonged exposure may cause irritation, dermatitis, and a rash of pimples and spots.



**Carcinogenicity:**

For Fuel, Diesel:

ACGIH: A3 - Animal carcinogen. "Available evidence suggests that the agent is not likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure."

IARC: 3 - The agent (mixture, exposure circumstance) is not classifiable as to its carcinogenicity to humans.

**Reproductive Toxicity:** This product is not reported to have any reproductive toxicity effects.

**Specific Target Organ Toxicity - Single Exposure (Globally Harmonized System:)** May cause drowsiness or dizziness.

**Specific Target Organ Toxicity - Repeated Exposure (Globally Harmonized System:)** No data available.

**Aspiration Respiratory Organs Hazard:** The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs,) severe lung damage, respiratory failure and even death.

**Acute Toxicity:** Oral LD50: > 5000 mg/kg (rat)

## 12. Ecological Information

**Ecotoxicity:** Very toxic to aquatic life with long lasting effects. 96 h LC50 Pimephales promelas - 35 mg/L (flow-through)

**Persistence and Degradability:** No information available

**Bioaccumulative Potential:** No information available

**Mobility in Soil:** No information available

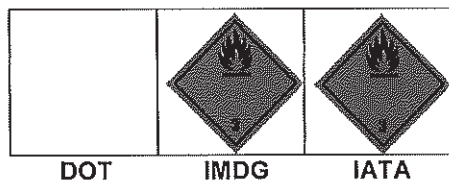
**Other adverse effects:** No information available

## 13. Disposal Considerations

The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal should be in accordance with applicable regional, national, state, and local laws and regulations. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

## 14. Transport Information

**Packing Group:** III



**Land Transport ADR/RID and GGVS/GGVE (Cross Border / Domestic)**

**UN Number:** UN1993

**UN Proper Shipping Name:** COMBUSTIBLE - LIQUID, N.O.S. (FUEL, DIESEL)

**Transport Hazard Class(es):** Combustible Liquid

**Maritime Transport IMDG/GGVSea****UN Number:** UN1202**UN Proper Shipping Name:** FLAMMABLE LIQUID, N.O.S. (FUEL, DIESEL)

Not regulated if flashpoint is &gt; 60C

**Transport Hazard Class(es):** 3**Marine Pollutant:** Yes**Air Transport ICAO-TI and IATA-DGR****UN Number:** UN1202**UN Proper Shipping Name:** FLAMMABLE LIQUID, N.O.S. (FUEL, DIESEL)

Not regulated if flashpoint is &gt; 60C

**Transport Hazard Class(es):** 3**Transport in Bulk according to Annex II of MARPOL 73/78 and the IBC Code****Special Precautions for User:** No additional information**15. Regulatory Information****HCS Classification:** Combustible liquid  
Carcinogen**U.S. Federal Regulations:** TSCA 4(a) final test rules: No products listed.  
TSCA 8(a) PAIR: No products listed.  
United States inventory (TSCA 8b): All components are listed or exempted.  
TSCA 12(b): No products listed.  
SARA 302/304/311/312 extremely hazardous substances: No products listed.  
SARA 302/304 emergency planning and notification: No products were found.  
SARA 302/304/311/312 hazardous chemicals: No products listed.  
SARA 311/312 MSDS distribution - chemical inventory - hazard identification:  
No products listed.  
Clean Water Act (CWA) 307: Ethylbenzene  
Clean Water Act (CWA) 311: Ethylbenzene  
Clean Air Act (CAA) 112 accidental release prevention: No products were found.  
Clean Air Act (CAA) 112 regulated flammable substances: No products listed.  
Clean Air Act (CAA) 112 regulated toxic substances: No products were found.**SARA 313** Form R – Reporting Requirements and Supplier Notification: No products listed.  
SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.**State Regulations:** Connecticut Carcinogen Reporting: None of the components are listed.  
Connecticut Hazardous Material Survey: None of the components are listed.  
Florida substances: None of the components are listed.  
Illinois Chemical Safety Act: None of the components are listed.  
Illinois Toxic Substances Disclosure to Employee Act: None listed.  
Louisiana Reporting: None of the components are listed.  
Louisiana Spill: None of the components are listed.  
Massachusetts Spill: None of the components are listed.  
Massachusetts Substances: None of the components are listed.  
Michigan Critical Material: None of the components are listed.  
Minnesota Hazardous Substances: None of the components are listed.  
New Jersey Hazardous Substances: The following components are listed: Diesel Fuel  
New Jersey Spill: None of the components are listed.  
New Jersey Toxic Catastrophe Prevention Act: None of the components are listed.  
New York Acutely Hazardous Substances: None of the components are listed.  
New York Toxic Chemical Release Reporting: None of the components are listed.

**Pennsylvania RTK Hazardous Substances:** None of the components are listed.  
**Rhode Island Hazardous Substances:** None of the components are listed.

**California Prop. 65**

**Ingredient Name**  
Ethylbenzene

**Cancer**

Yes

**Reproductive**

No

**No significant  
Risk Level**

No

**Maximum  
Acceptable Dosage  
Level**  
No

**International Lists:**

This product, (and its ingredients) is (are) listed on national inventories, or is (are) exempted from being listed, in Australia (AICS), in Europe (EINECS/ELINCS), in Korea (TCCL), in Japan (METI), in the Philippines (RA6969.)

## 16. Other Information

**HMIS / NFPA Hazard Rating:**

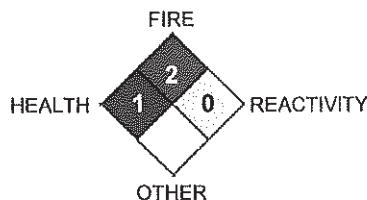
4=EXTREME

3= SERIOUS

2= MODERATE

1=SLIGHT

0=MINIMAL



*Effective Date:* 11/01/13 – Standardized for GHS and REACH  
*Previous Revisions:* 11/02, 06/05, 10/08, 1/11

The information contained herein is based on data available at this time and is believed to be accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Since information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar, no responsibility is assumed for the results of its use. The person receiving this information shall make his / her own determination of the suitability of the material for his / her particular purposes.






## SAFETY DATA SHEET

### Section 1: Product and Company Identification

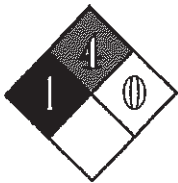
<b>Product Name:</b>	<b>Natural Gas (High Methane Content), Odorized</b>	
<b>Material Use:</b>	Fuel	
<b>Supplier/Manufacturer:</b>	Xpress Natural Gas 30 Rowes Wharf Sixth Floor Boston, MA 02110  Tel: 857-233-5329 Fax: 857-350-4599 www.xng.com	Spectra Energy Corporation* P. O. Box 1642 Houston, TX 77251 Tel: 713-627-5400 Fax: 713-989-8347  <i>*(Maritimes and Northeast Pipeline Limited Partnership, M&amp;N Operating Company LLC)</i>
<b>In Case of Emergency:</b>	<b>24 Hour Emergency Telephone Number</b> <b>Professional Emergency Response Services (PERS): 1-800-633-8253</b>	

### Section 2: Hazards Identification

<b>GHS Label Elements / Precautionary Statements</b>		
<b>Pictograms:</b>	  	
<b>Signal Word:</b>	DANGER	
<b>Target Organs:</b>	Central nervous system, respiratory system	
<b>Hazard Statements:</b>	H220 Extremely flammable gas H280 Contains gas under pressure; may explode if heated	
<b>Precautionary Statements:</b>	P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking P377 Leaking gas fire: Do not extinguish P381 Eliminate all ignition sources if safe to do so P403 Store in a well-ventilated place	
<b>Color:</b>	Colorless	
<b>Odor:</b>	Sulphurous, Garlic-like, "Rotten Egg" smell (mercaptan mixture added as odorant)	
<b>Physical State:</b>	Gas	
<b>Specific Gravity:</b>	0.717 grams/L @ 0°C / 0.871 grams/mL @ 60°F	

# **XNG SAFETY DATA SHEET**

## **(NATURAL GAS (HIGH METHANE CONTENT), ODORIZED**

<b>Precautions:</b>	In a fire or if heated, a pressure increase will occur and the piping, valves and fittings may burst or explode. At very high concentrations, the gas can displace the normal air and cause suffocation from lack of oxygen. Do not puncture or heat pipe. Do not enter piping areas and confined spaces unless adequately ventilated. Avoiding breathing gas. Use only with adequate ventilation. Keep piping valves and fittings sealed and leak free.
<b>HMIS Rating (Scale 0 – 4)</b>	Health: 1 Flammability: 4 Reactivity: 0 (0=Minimal Hazard, 4=Severe Hazard)
<b>NFPA Rating (Scale 0 – 4)</b>	Health: 1 Flammability: 4 Reactivity: 0 (0=Minimal Hazard, 4=Severe Hazard)  
<b>Potential Acute Health Effects</b>	
Inhalation:	At very high concentrations, can displace the normal air and cause suffocation from lack of oxygen.
Ingestion:	Ingestion is not likely.
Skin:	Contact with rapidly expanding gas may cause frostbite.
Eyes:	Contact with rapidly expanding gas may cause frostbite.
<b>Potential Chronic Health Effects</b>	
Chronic Effects:	Contains material that can cause target organ damage.
Carcinogenicity:	No known significant effects or critical hazards.
Mutagenicity:	No known significant effects or critical hazards.
Teratogenicity:	No known significant effects or critical hazards.
Developmental Effects:	No known significant effects or critical hazards.

### **Section 3: Composition / Information on Ingredients**

<b>Hazardous Ingredients</b>	<b>CAS No</b>	<b>Approx. %</b>	<b>ACGIH<sup>1,2</sup> TLV (ppm)</b>	<b>OSHA<sup>3</sup> PEL (ppm)</b>	<b>LD50 / LC50 Specific Species and Route</b>
Methane	74-82-8	85 - 95	---	---	
Ethane	74-84-0	0 - 3	---	---	
Propane	74-98-6	0 - 3	---	1000	
Butane	106-97-8	0 - 3	---	---	
Pentane	109-66-0	0 - 3	600	1000	
Carbon Dioxide	124-38-9	1 - 2	5000	5000	
Nitrogen	7727-37-9	0 - 2	---	---	

Note: The percentages listed above are approximate only and will vary. Odorized at a nominal rate of 0.4 to 0.5 lb/MMscf (odorant vapor/gas) in order to maintain a minimum concentration of 1% gas in air (to comply with Federal 49 CFR Part 190.625). The odorant is added at 2 ppm by volume which is << 0.1% volume of the Natural Gas. This allows a normal sense of smell to sniff and detect odorant concentration at 20% of LEL. The nominal formulation for odorant: 78% Tertiary Butyl Mercaptan, 16% Isopropyl Mercaptan & 6% Normal Propyl Mercaptan.



**XNG SAFETY DATA SHEET**  
**NATURAL GAS (HIGH METHANE CONTENT), ODORIZED**

<sup>1</sup>ACGIH TLV: Threshold Limit Value, Recommended by the American Conference of Governmental Industrial Hygienist (ACGIH)

<sup>2</sup>Designated as a simple asphyxiant by ACGIH

<sup>3</sup>OSHA PEL: Permissible Exposure Limit regulated by the Occupational Safety and Health Administration

**Section 4: First Aid Measures**

<b>Inhalation:</b>	If affected, move person to fresh air (Rescuer must wear supplied air respirator to remove worker to uncontaminated area). If breathing is difficult, administer oxygen. If not breathing or if no heartbeat, give cardiopulmonary resuscitation (CPR). Immediately call a physician.
<b>Skin Contact:</b>	If symptoms or irritation occur, call a physician.
<b>Eye Contact:</b>	If symptoms occur, call a physician.
<b>Ingestion:</b>	Ingestion not likely.
<b>Notes to Physician:</b>	No specific treatment. Treat symptomatically.

**Section 5: Fire Fighting Measures**

<b>Flash Point and Method:</b>	-187.7°C / -305.86°F Tag Closed Cup
<b>Auto-ignition Temperature:</b>	538°C / 1000.4°F
<b>Flammability:</b>	Can be easily ignited by flame or spark. Vapors are lighter than air and may travel considerable distance to a source of ignition and flash back. Do not drill, cut or weld on empty pipes that have contained natural gas until certified gas free. Evacuate area if pressure relief valves activate.
<b>Flammable Limits:</b>	LEL 5.0% (estimate) UEL 15.4% (estimate)
<b>Extinguishing Media:</b>	Dry chemical or carbon dioxide (CO <sub>2</sub> ) is recommended. <i>Warning: Do not attempt to extinguish a fire involving natural gas unless the flow of natural gas can be stopped, otherwise explosive gas-air mixture could be formed creating a far more dangerous environment than the original fire.</i>
<b>Hazardous Decomposition Products:</b>	CO <sub>2</sub> , CO, NO <sub>x</sub> , SO <sub>2</sub>
<b>Sensitivity to Mechanical Impact:</b>	Not Applicable
<b>Sensitivity to Static Discharge:</b>	Yes (low in pipeline) due to the low electroconductivity of the methane, flow or agitation may generate electrostatic charges resulting in sparks with possible ignition.
<b>Fire and Explosion Hazards:</b>	Forms an explosive mixture with air or oxygen; Hazard of re-ignition or explosion exists if flame is extinguished without stopping flow of gas or cooling surroundings.
<b>Fire Fighting Instructions:</b>	Evacuate area and stay upwind of vapors. Stop flow of gas. Use water to keep exposed piping, valves and fittings cool and to protect personnel attempting to shut off. If a leak has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop leak. For fires in enclosed areas, firefighters must use self-contained breathing apparatus.
<b>Special Equipment for Fire Fighters:</b>	Fire fighters should wear appropriate protective equipment and self-containing breathing apparatus (SCBA) with full facepiece operated in positive pressure mode.

**XNG SAFETY DATA SHEET**  
**NATURAL GAS (HIGH METHANE CONTENT), ODORIZED**

**Section 6: Accidental Release Measures**

<b>Personal Precautions:</b>	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).
<b>Environmental Precautions:</b>	Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
<b>Methods for Cleaning Up:</b>	Not Applicable.
<b>Small Leak:</b>	Immediately contact emergency personnel. Stop leak if without risk.
<b>Large Leak:</b>	Immediately contact emergency personnel. Note: see section 1 for emergency contact information and section 13 for waste disposal.

**Section 7: Handling and Storage**

<b>Handling:</b>	Put on appropriate personal protective equipment (see section 8). No smoking is allowed in addition, Eating and drinking should be prohibited in areas where this gas is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Avoid breathing gas. Do not puncture piping, valves and fittings.
<b>Storage:</b>	Maintain piping, valves and fittings in accordance with all laws and regulations.

**Section 8: Exposure Control / Personal Protection**

<b>Recommended Monitoring Procedures:</b>	Area and personal exposure or biological monitoring may be required to determine the effectiveness of or need for control measures and/or the necessity of respiratory protective equipment.
<b>Engineering Measures:</b>	No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
<b>Hygiene Measures:</b>	Eyewash stations and safety showers should be close to the workstation location. Wash hands, forearms and face thoroughly after handling chemical products, before eating, drinking, smoking & using the lavatory and at the end of the working period.
<b>Respiratory Protection:</b>	Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Wear an appropriate NIOSH approved respirator.
<b>Hand Protection:</b>	Use gloves appropriate for work or task being performed.
<b>Skin Protection:</b>	No special protective clothing required.
<b>Eye Protection:</b>	Recommended: Wear Z87.1 compliant safety glasses.

**Section 9: Physical and Chemical Properties**

<b>Boiling Point(°C/°F):</b>	-161.4°C / -258°F @ 760 mm Hg
<b>Freezing Point (°C/°F):</b>	-182.6°C / -296.68°F
<b>Vapor Density (Air = 1):</b>	0.56
<b>Evaporation Rate:</b>	Gas
<b>Solubility in Water:</b>	3.5% @ 17°C / 62.6°F
<b>Odor Threshold (ppb):</b>	Mercaptan Mixture – approximately 2 ppm by volume
<b>pH:</b>	Not Applicable



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<b>Coef. Of Water/Oil Dist.:</b>	Not Applicable
<b>Vapor Pressure:</b>	522kPa @ 37.8°C / 100.0°F
<b>Solvent Solubility:</b>	Soluble in alcohol, ether, benzene, organic solvents

**Section 10: Stability and Reactivity**

<b>Chemical Stability:</b>	This product is stable.
<b>Conditions to Avoid:</b>	Included but are not limited to heat, sparks, flames, and build-up of static electricity
<b>Materials to Avoid:</b>	Include but are not limited to the following oxidizers such as air, oxygen, chlorine, fluorine, perchlorates, nitrates, etc. Note: Natural gas ignites spontaneously when mixed with chlorine dioxides.
<b>Hazardous Decomposition Products:</b>	Decomposition products may include the following: carbon dioxide, carbon monoxide.
<b>Possibility of Hazardous Reactions:</b>	Under normal conditions of use, hazardous reactions will not occur.
<b>Hazardous Polymerization:</b>	Under normal conditions of use, hazardous polymerization will not occur.

**Section 11: Toxicological Information**

<b>Acute Toxicity:</b>	No specific data
<b>Chronic Toxicity:</b>	No specific data

**Section 12: Ecological Information**




<b>Environmental Effects:</b>	Not established
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**Section 13: Disposal Considerations**

<b>Waste Disposal:</b>	This product is a gas and normally it would not be managed as a waste. Venting of gas to the atmosphere should be minimized. Venting should be made in accordance with all applicable federal, national, regional, state, and local laws and regulations. Note: Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.
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**XNG SAFETY DATA SHEET**  
**NATURAL GAS (HIGH METHANE CONTENT), ODORIZED**



**Section 14: Transportation Information**

Regulatory Information	UN Number	Proper Shipping Name	Classes	PG*	Label	Additional Information
<b>**TDG Classification</b>	UN 1971	NATURAL GAS, high METHANE content	2.1	-		-
<b>IMDG Class</b>	UN 1971	NATURAL GAS, high METHANE content	2.1	-		-
<b>IATA-DGR Class</b>	UN 1971	NATURAL GAS, high METHANE content	2.1	-		-

PG\*: Packing Group (Exemption to the above classification may apply.)

\*\*Natural Gas in a pipeline is TDG Exempt

**Section 15: Regulatory Information**

<b>HMIS Hazard Ratings:</b>	Health: 1 Flammability: 4 Reactivity: 0 (0=Minimal Hazard, 4=Severe Hazard)												
<b>NFPA Rating:</b>	Flammability: 4 Health: 1 Instability: 0 (0=Minimal Hazard, 4=Severe Hazard)												
<b>WHMIS (Canada):</b>	Class A – Compressed Gas Class B-1 – Flammable Gas  												
<b>US Federal Regulations:</b>	<p>This product and its constituents listed herein are on the EPA TSCA Chemical Substance Inventory. Any uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state, and/or local reporting requirements.</p> <p><b><u>CERCLA/SARA – Section 302 Extremely Hazardous Substances and TPOs (in pounds):</u></b></p> <p>This product does not contain any chemical subject to the reporting requirements of SARA 302 and 40 CFR 372</p> <p><b><u>CERCLA/SARA – Section 311/312 (Title III Hazard Categories):</u></b></p> <table><tr><td>Acute Health Hazard</td><td>Yes</td><td>Chronic Hazard</td><td>No</td></tr><tr><td>Fire Hazard</td><td>Yes</td><td>Reactive Hazard</td><td>No</td></tr><tr><td>Pressure Hazard</td><td>Yes</td><td></td><td></td></tr></table> <p><b><u>CERCLA/SARA – Section 313 and 40 CFR 372:</u></b></p> <p>This product does contain methane which is subject to the reporting requirements of SARA 313 and 40 CFR 372</p> <p><b><u>EPA (CERCLA) Reportable Quantity (in pounds):</u></b></p> <p>EPA's Petroleum Exclusion applies to this product – (CERCLA 101(14)).</p>	Acute Health Hazard	Yes	Chronic Hazard	No	Fire Hazard	Yes	Reactive Hazard	No	Pressure Hazard	Yes		
Acute Health Hazard	Yes	Chronic Hazard	No										
Fire Hazard	Yes	Reactive Hazard	No										
Pressure Hazard	Yes												
<b>US State Regulations:</b>	Any leak or controlled release of this product may be subject to state and/or local reporting requirements. This product and/or its constituents may also be subject to other regulations at the state and/or local level. Consult those regulations applicable to your facility/operations.												

**XNG SAFETY DATA SHEET**  
**NATURAL GAS (HIGH METHANE CONTENT), ODORIZED**

**Section 16: Other Information**

<b>References:</b>	2013 TLVs and BEIs (ACGIH, 2013); online access to EPA Chemical Substances Inventory, RTECS, IARC, and NTP.
<b>Additional Information and Comments:</b>	This document covers "Natural Gas" as a general commodity for employee hazard communication information only. The exact specifications will vary to some extent for each batch.
<b>Disclaimer of Expressed and Implied Warranties:</b>	Xpress Natural Gas makes no warranties, express or implied, concerning material described in this MSDS, including, but not limited to implied warranties, or merchantability and fitness for a particular purpose. The information contained in this MSDS is believed to be correct, but no representations, guarantees, or warranties of any kind are made as to the accuracy, and Xpress Natural Gas disclaims all liability from reliance upon it. Users assume all risk and liability of any use, processing or handling.



24-HOUR EMERGENCY TELEPHONE

SPRAGUE: 603-431-1000

CHEMTREC: 800-424-9300

## SDS – SAFETY DATA SHEET

### 1. Identification

**Product Identifier:** ULTRA LOW SULFUR DIESEL FUEL # 2

**Synonyms:** HIGHWAY DIESEL FUEL OIL, #2, FUEL OIL (ULTRA LOW SULFUR DIESEL)

**Chemical Formula:** Not applicable to mixtures

**Recommended Use of the Chemical and Restrictions On Use:** Fuel

**Manufacturer / Supplier:** Sprague Operating Resources LLC

**Phone:** 603-431-1000

185 International Drive, Portsmouth, NH 03801

**Emergency Phone Number:** SPRAGUE: 603-431-1000; CHEMTREC: 800-424-9300

### 2. Hazard(s) Identification

**Classification of the Substance or Mixture:**

Flammable Liquids - Category 4

Carcinogenicity - Category 2

Specific Target Organ Toxicity (Single Exposure) – Category 3

Aspiration Hazard – Category 1

Acute Aquatic Toxicity – Category 3

**Risk Phrases:**

R40: Limited evidence of a carcinogenic effect.

R52: Harmful to aquatic organisms.

R65: Harmful: may cause lung damage if swallowed.

R67: Vapors may cause drowsiness and dizziness.

**Label Elements:**

**Trade Name:** ULTRA LOW SULFUR DIESEL FUEL # 2

**Signal Word:** Warning



**Hazard Statements:**

H227: Combustible liquid.

H304: May be fatal if swallowed and enters airways.

H336: May cause drowsiness or dizziness.

H351: Suspected of causing cancer.

H402: Harmful to aquatic life.

**Precautionary Statements:**

P261: Avoid breathing dust / fume / gas / mist / vapors / spray.

P281: Wear protective equipment as required.

P301 + 310: IF SWALLOWED: Immediately call a POISON CENTER or doctor / physician.

P331: Do NOT induce vomiting.

**3. Composition / Information on Ingredients**

**CAS Number:** Not applicable to mixtures

**EC Number:** Not applicable to mixtures

**Index Number:** Not applicable to mixtures

**Molecular Weight:** Not applicable to mixtures

Ingredient	CAS Number	Percent	Hazardous	Chemical Characterization
Fuel, Diesel	68476-34-6	99%	Yes	Substance
Polycyclic Hydrocarbons	08-007-452	< 1%	Yes	Substance

**4. First-aid Measures**

**Inhalation:** Remove from vapor to fresh air. If breathing has stopped, give artificial respiration. Get medical immediately.

**Ingestion:** DO NOT INDUCE VOMITING or give anything by mouth to an unconscious person. If more than 1 mg/kg of petroleum distillates are swallowed, remove by gastric lavage by qualified medical personnel. If vomiting occurs, keep person's head lower than hips to help prevent pulmonary aspiration. After vomiting stops, give 30-60 ml of Fleet's Phosphor-Soda diluted 1:4 in water. Get medical attention immediately.

**Skin Contact:** Remove contaminated clothing. Wipe off excess oil with a dry cloth and then wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes.) If irritation develops, seek medical aid.

**Eye Contact:** Check for and remove any contact lenses. Flush eyes immediately with large amounts of water, occasionally lifting upper and lower lids until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention if symptoms occur.

**5. Fire-fighting Measures**

**Fire:** Flammable Liquid and Vapor!

**Explosion:** Do not mix or store with strong oxidants. Do not store or pour near sources of ignition. Do not pressurize, cut, heat, weld, or expose empty containers to sources of ignition. Vapors are heavier than air and may travel a considerable distance to a source of ignition and flash back.

**Fire Extinguishing Media:** Foam, Carbon Dioxide, Dry Chemical, and for larger fires, Water Spray, Fog, or Foam.

**Special Information:** Use supplied-air breathing equipment for enclosed areas. Cool exposed containers with water spray. Continue water spray until entire container contents are cool. Withdraw immediately in the event of rising sound from venting safety device or any discoloration of storage tank due to fire (subject to the fire chief's directions.)

**6. Accidental Release Measures**

**Personal Precautions, Protective Equipment and Emergency Procedures:** No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment as per Section 8.



**Environmental Precautions and Methods and Materials for Containment and Cleaning Up:** Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Observe local, state and federal governmental spill and water quality regulations.

If properly trained, proceed with the following measures:

1. For small spills: Stop leak if without risk. Move containers from spill area. take up with sand or other absorbent material and place into containers for alter disposal.
2. For large spills: Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Dike far ahead of spill to prevent entrance into watercourses and / or ground water.

Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product.

## 7. Handling and Storage

### Precautions for Safe Handling and Conditions for Safe Storage, Including Any Incompatibilities:

Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Use appropriate containment to avoid environmental contamination.

## 8. Exposure Controls / Personal Protection

### Airborne Exposure Limits:

ACGIH Threshold Limit Value (TWA): 100 mg/m3 (measured as total hydrocarbons) 8 h (skin)

**Ventilation System:** Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):** A respirator is not needed under normal and intended conditions of use. If the exposure limit is exceeded and engineering controls are not feasible, use a mask with an organic vapor cartridge or positive pressure air supplied (SCBA) unit. Breathing air quality must meet the requirements of the OSHA respiratory protection standard (29CFR1910.134).

**Skin Protection:** Gloves – Neoprene, PVC. Disposable outer garments or impervious garments of equal or greater protection should be worn.

**Eye Protection:** Use chemical safety goggles and / or a full face shield where splashing is possible.

**Hygiene Measures:** Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

## 9. Physical and Chemical Properties

**Appearance:** Clear, slightly viscous liquid

**Odor:** Gasoline-like, diesel fuel odor

**Odor Threshold:** Not determined  
**pH:** No information found  
**% Volatiles by volume @ 21C (70F):** Greater than 50%  
**Melting Point:** Not determined  
**Boiling Point / Boiling Range:** 200 - 350C (392 - 662F) at 1,013 hPa (750 mm Hg)  
**Flash Point:** 50 - 80C (122 - 176F) Closed Cup  
**Evaporation Rate (BuAC=1):** Not determined  
**Flammability:** Combustible  
**Upper / Lower Flammability or Explosive Limits:** Upper - 10.0 / Lower - 0.6  
**Vapor Pressure (mm Hg):** 1 mm Hg @ 20C (68F)  
**Vapor Density (Air=1):** Greater than 5  
**Relative Density:** 0.86  
**Solubility:** Insoluble  
**Partition Coefficient: n-octanol / water:** Not determined  
**Auto-ignition Temperature:** > 260C (500F)  
**Decomposition Temperature:** Not determined  
**Viscosity:** Not determined

## 10. Stability and Reactivity

**Reactivity and / or Chemical Stability:** Stable under ordinary conditions of use and storage at normal temperatures and pressures.

**Possibility of Hazardous Reactions and Conditions to Avoid:** Heat, flames, ignition sources and incompatibles.

**Incompatible Materials:** Reactive or incompatible with oxidizing materials.

**Hazardous Decomposition Products:** Thermal decomposition may release various hydrocarbons and hydrocarbon derivatives including carbon dioxide, water, organic acids, and aldehydes.

## 11. Toxicological Information

**Emergency Overview:** WARNING! COMBUSTIBLE. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. HARMFUL IF INGESTED. ASPIRATION HAZARD.

Combustible liquid. Keep away from heat, sparks and flame. Avoid exposure - obtain special instructions before use. Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

### Potential Health Effects:

**Inhalation:** Mist or vapor may cause respiratory tract irritation. CNS depressant. High levels may cause giddiness, headache, dizziness, nausea, vomiting, and loss of coordination, narcosis, stupor, coma, and unconsciousness.

**Ingestion:** Irritation, giddiness, vertigo, headache, anesthetic stupor, CNS depression, coma and death.

**Skin Contact:** Drying, cracking, and defatting dermatitis. Direct contact may cause extreme irritation with severe erythema and edema with blistering and open sores. Absorption of large amounts may result in narcosis.

**Eye Contact:** Moderately irritating to eyes.

### Chronic Exposure:

**Inhalation:** Prolonged exposure may cause dizziness, weakness, weight loss, anemia, nervousness, and pain in the limbs, peripheral numbness, and paresthesia. Renal failure possible. Degenerative changes of liver and kidneys may occur after prolonged exposure to high concentrations.

**Skin Contact:** Repeated or prolonged exposure may cause irritation, dermatitis, and a rash of pimples and spots.

**Carcinogenicity:**

For Fuel, Diesel:

ACGIH: A3 - Animal carcinogen. "Available evidence suggests that the agent is not likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure."

IARC: 3 - The agent (mixture, exposure circumstance) is not classifiable as to its carcinogenicity to humans.

**Reproductive Toxicity:** This product is not reported to have any reproductive toxicity effects.

**Specific Target Organ Toxicity - Single Exposure (Globally Harmonized System:)** May cause drowsiness or dizziness.

**Specific Target Organ Toxicity - Repeated Exposure (Globally Harmonized System:)** No data available.

**Aspiration Respiratory Organs Hazard:** The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs,) severe lung damage, respiratory failure and even death.

**Acute Toxicity:** Oral LD50: > 5000 mg/kg (rat)

## 12. Ecological Information

**Ecotoxicity:** Very toxic to aquatic life with long lasting effects. 96 h LC50 Pimephales promelas - 35 mg/L (flow-through)

**Persistence and Degradability:** No information available

**Bioaccumulative Potential:** No information available

**Mobility in Soil:** No information available

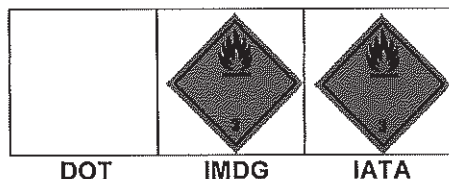
**Other adverse effects:** No information available

## 13. Disposal Considerations

The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal should be in accordance with applicable regional, national, state, and local laws and regulations. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

## 14. Transport Information

**Packing Group:** III



**Land Transport ADR/RID and GGVS/GGVE (Cross Border / Domestic)**

**UN Number:** UN1993

**UN Proper Shipping Name:** COMBUSTIBLE - LIQUID, N.O.S. (FUEL, DIESEL)

**Transport Hazard Class(es):** Combustible Liquid



**Maritime Transport IMDG/GGVSea****UN Number:** UN1202**UN Proper Shipping Name:** FLAMMABLE LIQUID, N.O.S. (FUEL, DIESEL)

Not regulated if flashpoint is &gt; 60C

**Transport Hazard Class(es):** 3**Marine Pollutant:** Yes**Air Transport ICAO-TI and IATA-DGR****UN Number:** UN1202**UN Proper Shipping Name:** FLAMMABLE LIQUID, N.O.S. (FUEL, DIESEL)

Not regulated if flashpoint is &gt; 60C

**Transport Hazard Class(es):** 3**Transport in Bulk according to Annex II of MARPOL 73/78 and the IBC Code****Special Precautions for User:** No additional information**15. Regulatory Information****HCS Classification:** Combustible liquid  
Carcinogen**U.S. Federal Regulations:** TSCA 4(a) final test rules: No products listed.  
TSCA 8(a) PAIR: No products listed.  
United States inventory (TSCA 8b): All components are listed or exempted.  
TSCA 12(b): No products listed.  
SARA 302/304/311/312 extremely hazardous substances: No products listed.  
SARA 302/304 emergency planning and notification: No products were found.  
SARA 302/304/311/312 hazardous chemicals: No products listed.  
SARA 311/312 MSDS distribution - chemical inventory - hazard identification:  
No products listed.  
Clean Water Act (CWA) 307: Ethylbenzene  
Clean Water Act (CWA) 311: Ethylbenzene  
Clean Air Act (CAA) 112 accidental release prevention: No products were found.  
Clean Air Act (CAA) 112 regulated flammable substances: No products listed.  
Clean Air Act (CAA) 112 regulated toxic substances: No products were found.**SARA 313** Form R – Reporting Requirements and Supplier Notification: No products listed.  
SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.**State Regulations:** Connecticut Carcinogen Reporting: None of the components are listed.  
Connecticut Hazardous Material Survey: None of the components are listed.  
Florida substances: None of the components are listed.  
Illinois Chemical Safety Act: None of the components are listed.  
Illinois Toxic Substances Disclosure to Employee Act: None listed.  
Louisiana Reporting: None of the components are listed.  
Louisiana Spill: None of the components are listed.  
Massachusetts Spill: None of the components are listed.  
Massachusetts Substances: None of the components are listed.  
Michigan Critical Material: None of the components are listed.  
Minnesota Hazardous Substances: None of the components are listed.  
New Jersey Hazardous Substances: The following components are listed: Diesel Fuel  
New Jersey Spill: None of the components are listed.  
New Jersey Toxic Catastrophe Prevention Act: None of the components are listed.  
New York Acutely Hazardous Substances: None of the components are listed.  
New York Toxic Chemical Release Reporting: None of the components are listed.

**Pennsylvania RTK Hazardous Substances:** None of the components are listed.  
**Rhode Island Hazardous Substances:** None of the components are listed.

**California Prop. 65**

**Ingredient Name**  
Ethylbenzene

**Cancer**

Yes

**Reproductive**

No

**No significant  
Risk Level**

No

**Maximum  
Acceptable Dosage  
Level**  
No

**International Lists:**

This product, (and its ingredients) is (are) listed on national inventories, or is (are) exempted from being listed, in Australia (AICS), in Europe (EINECS/ELINCS), in Korea (TCCL), in Japan (METI), in the Philippines (RA6969.)

## 16. Other Information

**HMIS / NFPA Hazard Rating:**

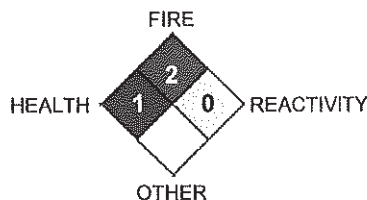
4=EXTREME

3= SERIOUS

2= MODERATE

1=SLIGHT

0=MINIMAL



*Effective Date:* 11/01/13 – Standardized for GHS and REACH  
*Previous Revisions:* 11/02, 06/05, 10/08, 1/11

The information contained herein is based on data available at this time and is believed to be accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Since information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar, no responsibility is assumed for the results of its use. The person receiving this information shall make his / her own determination of the suitability of the material for his / her particular purposes.






## SAFETY DATA SHEET

### Section 1: Product and Company Identification

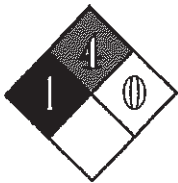
<b>Product Name:</b>	<b>Natural Gas (High Methane Content), Odorized</b>	
<b>Material Use:</b>	Fuel	
<b>Supplier/Manufacturer:</b>	Xpress Natural Gas 30 Rowes Wharf Sixth Floor Boston, MA 02110  Tel: 857-233-5329 Fax: 857-350-4599 www.xng.com	Spectra Energy Corporation* P. O. Box 1642 Houston, TX 77251 Tel: 713-627-5400 Fax: 713-989-8347  <i>*(Maritimes and Northeast Pipeline Limited Partnership, M&amp;N Operating Company LLC)</i>
<b>In Case of Emergency:</b>	<b>24 Hour Emergency Telephone Number</b> <b>Professional Emergency Response Services (PERS): 1-800-633-8253</b>	

### Section 2: Hazards Identification

<b>GHS Label Elements / Precautionary Statements</b>		
<b>Pictograms:</b>	  	
<b>Signal Word:</b>	<b>DANGER</b>	
<b>Target Organs:</b>	Central nervous system, respiratory system	
<b>Hazard Statements:</b>	H220      Extremely flammable gas H280      Contains gas under pressure; may explode if heated	
<b>Precautionary Statements:</b>	P210      Keep away from heat/sparks/open flames/hot surfaces. No smoking P377      Leaking gas fire: Do not extinguish P381      Eliminate all ignition sources if safe to do so P403      Store in a well-ventilated place	
<b>Color:</b>	Colorless	
<b>Odor:</b>	Sulphurous, Garlic-like, "Rotten Egg" smell (mercaptan mixture added as odorant)	
<b>Physical State:</b>	Gas	
<b>Specific Gravity:</b>	0.717 grams/L @ 0°C / 0.871 grams/mL @ 60°F	

# XNG SAFETY DATA SHEET

## NATURAL GAS (HIGH METHANE CONTENT), ODORIZED

<b>Precautions:</b>	In a fire or if heated, a pressure increase will occur and the piping, valves and fittings may burst or explode. At very high concentrations, the gas can displace the normal air and cause suffocation from lack of oxygen. Do not puncture or heat pipe. Do not enter piping areas and confined spaces unless adequately ventilated. Avoiding breathing gas. Use only with adequate ventilation. Keep piping valves and fittings sealed and leak free.
<b>HMIS Rating (Scale 0 – 4)</b>	Health: 1 Flammability: 4 Reactivity: 0 (0=Minimal Hazard, 4=Severe Hazard)
<b>NFPA Rating (Scale 0 – 4)</b>	Health: 1 Flammability: 4 Reactivity: 0 (0=Minimal Hazard, 4=Severe Hazard)  
<b>Potential Acute Health Effects</b>	
Inhalation:	At very high concentrations, can displace the normal air and cause suffocation from lack of oxygen.
Ingestion:	Ingestion is not likely.
Skin:	Contact with rapidly expanding gas may cause frostbite.
Eyes:	Contact with rapidly expanding gas may cause frostbite.
<b>Potential Chronic Health Effects</b>	
Chronic Effects:	Contains material that can cause target organ damage.
Carcinogenicity:	No known significant effects or critical hazards.
Mutagenicity:	No known significant effects or critical hazards.
Teratogenicity:	No known significant effects or critical hazards.
Developmental Effects:	No known significant effects or critical hazards.

### Section 3: Composition / Information on Ingredients

Hazardous Ingredients	CAS No	Approx. %	ACGIH <sup>1,2</sup> TLV (ppm)	OSHA <sup>3</sup> PEL (ppm)	LD50 / LC50 Specific Species and Route
Methane	74-82-8	85 - 95	---	---	
Ethane	74-84-0	0 - 3	---	---	
Propane	74-98-6	0 - 3	---	1000	
Butane	106-97-8	0 - 3	---	---	
Pentane	109-66-0	0 - 3	600	1000	
Carbon Dioxide	124-38-9	1 - 2	5000	5000	
Nitrogen	7727-37-9	0 - 2	---	---	

Note: The percentages listed above are approximate only and will vary. Odorized at a nominal rate of 0.4 to 0.5 lb/MMscf (odorant vapor/gas) in order to maintain a minimum concentration of 1% gas in air (to comply with Federal 49 CFR Part 190.625). The odorant is added at 2 ppm by volume which is << 0.1% volume of the Natural Gas. This allows a normal sense of smell to sniff and detect odorant concentration at 20% of LEL. The nominal formulation for odorant: 78% Tertiary Butyl Mercaptan, 16% Isopropyl Mercaptan & 6% Normal Propyl Mercaptan.

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<sup>1</sup>ACGIH TLV: Threshold Limit Value, Recommended by the American Conference of Governmental Industrial Hygienist (ACGIH)

<sup>2</sup>Designated as a simple asphyxiant by ACGIH

<sup>3</sup>OSHA PEL: Permissible Exposure Limit regulated by the Occupational Safety and Health Administration

**Section 4: First Aid Measures**

<b>Inhalation:</b>	If affected, move person to fresh air (Rescuer must wear supplied air respirator to remove worker to uncontaminated area). If breathing is difficult, administer oxygen. If not breathing or if no heartbeat, give cardiopulmonary resuscitation (CPR). Immediately call a physician.
<b>Skin Contact:</b>	If symptoms or irritation occur, call a physician.
<b>Eye Contact:</b>	If symptoms occur, call a physician.
<b>Ingestion:</b>	Ingestion not likely.
<b>Notes to Physician:</b>	No specific treatment. Treat symptomatically.

**Section 5: Fire Fighting Measures**

<b>Flash Point and Method:</b>	-187.7°C / -305.86°F Tag Closed Cup
<b>Auto-ignition Temperature:</b>	538°C / 1000.4°F
<b>Flammability:</b>	Can be easily ignited by flame or spark. Vapors are lighter than air and may travel considerable distance to a source of ignition and flash back. Do not drill, cut or weld on empty pipes that have contained natural gas until certified gas free. Evacuate area if pressure relief valves activate.
<b>Flammable Limits:</b>	LEL 5.0% (estimate) UEL 15.4% (estimate)
<b>Extinguishing Media:</b>	Dry chemical or carbon dioxide (CO <sub>2</sub> ) is recommended. <i>Warning: Do not attempt to extinguish a fire involving natural gas unless the flow of natural gas can be stopped, otherwise explosive gas-air mixture could be formed creating a far more dangerous environment than the original fire.</i>
<b>Hazardous Decomposition Products:</b>	CO <sub>2</sub> , CO, NO <sub>x</sub> , SO <sub>2</sub>
<b>Sensitivity to Mechanical Impact:</b>	Not Applicable
<b>Sensitivity to Static Discharge:</b>	Yes (low in pipeline) due to the low electroconductivity of the methane, flow or agitation may generate electrostatic charges resulting in sparks with possible ignition.
<b>Fire and Explosion Hazards:</b>	Forms an explosive mixture with air or oxygen; Hazard of re-ignition or explosion exists if flame is extinguished without stopping flow of gas or cooling surroundings.
<b>Fire Fighting Instructions:</b>	Evacuate area and stay upwind of vapors. Stop flow of gas. Use water to keep exposed piping, valves and fittings cool and to protect personnel attempting to shut off. If a leak has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop leak. For fires in enclosed areas, firefighters must use self-contained breathing apparatus.
<b>Special Equipment for Fire Fighters:</b>	Fire fighters should wear appropriate protective equipment and self-containing breathing apparatus (SCBA) with full facepiece operated in positive pressure mode.



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**Section 6: Accidental Release Measures**

<b>Personal Precautions:</b>	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).
<b>Environmental Precautions:</b>	Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
<b>Methods for Cleaning Up:</b>	Not Applicable.
<b>Small Leak:</b>	Immediately contact emergency personnel. Stop leak if without risk.
<b>Large Leak:</b>	Immediately contact emergency personnel. Note: see section 1 for emergency contact information and section 13 for waste disposal.

**Section 7: Handling and Storage**

<b>Handling:</b>	Put on appropriate personal protective equipment (see section 8). No smoking is allowed in addition, Eating and drinking should be prohibited in areas where this gas is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Avoid breathing gas. Do not puncture piping, valves and fittings.
<b>Storage:</b>	Maintain piping, valves and fittings in accordance with all laws and regulations.

**Section 8: Exposure Control / Personal Protection**

<b>Recommended Monitoring Procedures:</b>	Area and personal exposure or biological monitoring may be required to determine the effectiveness of or need for control measures and/or the necessity of respiratory protective equipment.
<b>Engineering Measures:</b>	No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
<b>Hygiene Measures:</b>	Eyewash stations and safety showers should be close to the workstation location. Wash hands, forearms and face thoroughly after handling chemical products, before eating, drinking, smoking & using the lavatory and at the end of the working period.
<b>Respiratory Protection:</b>	Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Wear an appropriate NIOSH approved respirator.
<b>Hand Protection:</b>	Use gloves appropriate for work or task being performed.
<b>Skin Protection:</b>	No special protective clothing required.
<b>Eye Protection:</b>	Recommended: Wear Z87.1 compliant safety glasses.

**Section 9: Physical and Chemical Properties**

<b>Boiling Point(°C/°F):</b>	-161.4°C / -258°F @ 760 mm Hg
<b>Freezing Point (°C/°F):</b>	-182.6°C / -296.68°F
<b>Vapor Density (Air = 1):</b>	0.56
<b>Evaporation Rate:</b>	Gas
<b>Solubility in Water:</b>	3.5% @ 17°C / 62.6°F
<b>Odor Threshold (ppb):</b>	Mercaptan Mixture – approximately 2 ppm by volume
<b>pH:</b>	Not Applicable

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<b>Coef. Of Water/Oil Dist.:</b>	Not Applicable
<b>Vapor Pressure:</b>	522kPa @ 37.8°C / 100.0°F
<b>Solvent Solubility:</b>	Soluble in alcohol, ether, benzene, organic solvents

**Section 10: Stability and Reactivity**

<b>Chemical Stability:</b>	This product is stable.
<b>Conditions to Avoid:</b>	Included but are not limited to heat, sparks, flames, and build-up of static electricity
<b>Materials to Avoid:</b>	Include but are not limited to the following oxidizers such as air, oxygen, chlorine, fluorine, perchlorates, nitrates, etc. Note: Natural gas ignites spontaneously when mixed with chlorine dioxides.
<b>Hazardous Decomposition Products:</b>	Decomposition products may include the following: carbon dioxide, carbon monoxide.
<b>Possibility of Hazardous Reactions:</b>	Under normal conditions of use, hazardous reactions will not occur.
<b>Hazardous Polymerization:</b>	Under normal conditions of use, hazardous polymerization will not occur.

**Section 11: Toxicological Information**

<b>Acute Toxicity:</b>	No specific data
<b>Chronic Toxicity:</b>	No specific data

**Section 12: Ecological Information**

<b>Environmental Effects:</b>	Not established
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
**Section 13: Disposal Considerations**

<b>Waste Disposal:</b>	This product is a gas and normally it would not be managed as a waste. Venting of gas to the atmosphere should be minimized. Venting should be made in accordance with all applicable federal, national, regional, state, and local laws and regulations. Note: Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.
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**Section 14: Transportation Information**

Regulatory Information	UN Number	Proper Shipping Name	Classes	PG*	Label	Additional Information
<b>**TDG Classification</b>	UN 1971	NATURAL GAS, high METHANE content	2.1	-		-
<b>IMDG Class</b>	UN 1971	NATURAL GAS, high METHANE content	2.1	-		-
<b>IATA-DGR Class</b>	UN 1971	NATURAL GAS, high METHANE content	2.1	-		-

PG\*: Packing Group (Exemption to the above classification may apply.)

\*\*Natural Gas in a pipeline is TDG Exempt

**Section 15: Regulatory Information**

<b>HMIS Hazard Ratings:</b>	Health: 1 Flammability: 4 Reactivity: 0 (0=Minimal Hazard, 4=Severe Hazard)												
<b>NFPA Rating:</b>	Flammability: 4 Health: 1 Instability: 0 (0=Minimal Hazard, 4=Severe Hazard)												
<b>WHMIS (Canada):</b>	Class A – Compressed Gas Class B-1 – Flammable Gas  												
<b>US Federal Regulations:</b>	<p>This product and its constituents listed herein are on the EPA TSCA Chemical Substance Inventory. Any uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state, and/or local reporting requirements.</p> <p><b><u>CERCLA/SARA – Section 302 Extremely Hazardous Substances and TPOs (in pounds):</u></b></p> <p>This product does not contain any chemical subject to the reporting requirements of SARA 302 and 40 CFR 372</p> <p><b><u>CERCLA/SARA – Section 311/312 (Title III Hazard Categories):</u></b></p> <table><tr><td>Acute Health Hazard</td><td>Yes</td><td>Chronic Hazard</td><td>No</td></tr><tr><td>Fire Hazard</td><td>Yes</td><td>Reactive Hazard</td><td>No</td></tr><tr><td>Pressure Hazard</td><td>Yes</td><td></td><td></td></tr></table> <p><b><u>CERCLA/SARA – Section 313 and 40 CFR 372:</u></b></p> <p>This product does contain methane which is subject to the reporting requirements of SARA 313 and 40 CFR 372</p> <p><b><u>EPA (CERCLA) Reportable Quantity (in pounds):</u></b></p> <p>EPA's Petroleum Exclusion applies to this product – (CERCLA 101(14)).</p>	Acute Health Hazard	Yes	Chronic Hazard	No	Fire Hazard	Yes	Reactive Hazard	No	Pressure Hazard	Yes		
Acute Health Hazard	Yes	Chronic Hazard	No										
Fire Hazard	Yes	Reactive Hazard	No										
Pressure Hazard	Yes												
<b>US State Regulations:</b>	Any leak or controlled release of this product may be subject to state and/or local reporting requirements. This product and/or its constituents may also be subject to other regulations at the state and/or local level. Consult those regulations applicable to your facility/operations.												

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**Section 16: Other Information**

<b>References:</b>	2013 TLVs and BEIs (ACGIH, 2013); online access to EPA Chemical Substances Inventory, RTECS, IARC, and NTP.
<b>Additional Information and Comments:</b>	This document covers "Natural Gas" as a general commodity for employee hazard communication information only. The exact specifications will vary to some extent for each batch.
<b>Disclaimer of Expressed and Implied Warranties:</b>	Xpress Natural Gas makes no warranties, express or implied, concerning material described in this MSDS, including, but not limited to implied warranties, or merchantability and fitness for a particular purpose. The information contained in this MSDS is believed to be correct, but no representations, guarantees, or warranties of any kind are made as to the accuracy, and Xpress Natural Gas disclaims all liability from reliance upon it. Users assume all risk and liability of any use, processing or handling.



ASTRO PRODUCT CODE # 6061000

## Material Safety Data Sheet

WEGO CHEMICAL & MINERAL CORP

239 Great Neck Road

Great Neck, NY 11021

Phone: (516) 487 3510; email: sales@wegochem.com

Date of Revision: 5/2008

CITRIC ACID, anhydrous

### Section 1 - Chemical Product and Company Identification

**Product/Chemical Name:** Citric Acid, anhydrous

**Chemical Formula:**  $C_6H_8O_7$

**CAS Number:** 77-92-9

**Other Designations:** 2-Hydroxy-1,2,3-tricarboxylic acid, B-hydroxytricarballic acid

**Derivation:** A tricarboxylic acid derived by mycological fermentation using crude sugars such as molasses with strains of *Aspergillus niger* or yeast (*Candida hypolytica*). It may also be extracted from citrus fruit (lemon juice contains 5 to 8% citric acid) and pineapple waste.

**General Use:** Used as a food additive for many different applications including; flavor enhancer, acidifying and buffering agent, and antioxidant; in the manufacture of alkyd resins and citric acid salts, in pharmaceuticals for preparation of effervescent antacid powders; for cleaning and polishing metals, removing sulfur dioxide from ancler waste gases; a sequestering agent to remove trace metals, mordant to brighten colors, in electroplating, special inks, and analytical chemistry. Used in medicine as a blood anticoagulant.

**Emergency Telephone:** 1-800-424-9300 (Chemtree)

### Section 2 - Composition / Information on Ingredients

Ingredient Name	CAS Number	EINECS/ELINCS	% wt or % vol
Citric Acid, anhydrous	77-92-9	201-069-1	100

#### Trace Impurities:

Ingredient	OSHA PEL		ACGIH TLV		NIOSH REL		NIOSH
	TWA	STEL	TWA	STEL	TWA	STEL	IDLH
Citric Acid, anhydrous	15 mg/m <sup>3</sup>	none estab.	10 mg/m <sup>3</sup>	none estab.	none estab.	none estab.	none estab.

### Section 3 - Hazards Identification

#### ☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

**Warning:** Causes respiratory tract irritation. Causes skin irritation. Causes digestive tract irritation. May cause severe eye irritation and possible injury.

HMIS	
H	2
F	1
R	0
PPE†	
†Sec. 8	

#### Potential Health Effects

**Primary Entry Routes:** Inhalation, ingestion, skin and eye contact.

**Target Organs:** Eyes, skin, respiratory tract.

#### Acute Effects

**Inhalation:** May cause gastrointestinal irritation with nausea, vomiting and diarrhea. Citric acid decreases iron and calcium absorption.

**Eye:** Contact with eyes may cause severe irritation, and possible eye burns.

**Skin:** May cause skin irritation.

**Ingestion:** May cause gastrointestinal irritation with nausea, vomiting and diarrhea. Citric acid decreases iron and calcium absorption.

**Carcinogenicity:** IARC, NTP, and OSHA do not list citric acid as a carcinogen.

**Medical Conditions Aggravated by Long-Term Exposure:**

**Chronic Effects:** Chronic or heavy acute ingestion may cause tooth enamel erosion.

### Section 4 - First Aid Measures

**Inhalation:** Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid if cough or other symptoms appear.

**Eye Contact:** Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid immediately.

**Skin Contact:** Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.



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**Ingestion:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. Get medical aid.  
*After first aid, get appropriate in-plant, paramedic, or community medical support.*  
**Note to Physicians:** Treat symptomatically and supportively.

### Section 5 - Fire-Fighting Measures

**Flash Point:** ?? °F (?? °C)  
**Flash Point Method:** CC7, OC7, COC?  
**Burning Rate:**  
**Autoignition Temperature:** ?? °F (?? °C)  
**LEL:** ??% v/v  
**UEL:** ??% v/v



**Flammability Classification:**

**Extinguishing Media:**

**Unusual Fire or Explosion Hazards:**

**Hazardous Combustion Products:**

**Fire-Fighting Instructions:** Do not release runoff from fire control methods to sewers or waterways.

**Fire-Fighting Equipment:** Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facemask operated in pressure-demand or positive-pressure mode.

### Section 6 - Accidental Release Measures

**Spill/Leak Procedures:**

**Spills:** Collect spilled material in appropriate container for disposal.

**Spills Containment:** For large spills, dike far ahead of spill for later disposal. Do not release into sewers or waterways.

**Cleanup:**

**Regulatory Requirements:** Follow applicable OSHA regulations (29 CFR 1910.120).

### Section 7 - Handling and Storage

**Handling Precautions:** Store and handle in accordance with all current regulations and standards.

**Storage Requirements:** Store in a cool, dry place. Store in a tightly closed container. Keep separated from incompatible substances.

### Section 8 - Exposure Controls / Personal Protection

**Engineering Controls:**

**Ventilation:** Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

**Administrative Controls:**

**Respiratory Protection:** Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or non-routine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA.

**Warning!** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

**Protective Clothing/Equipment:** Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

**Safety Stations:** Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

**Contaminated Equipment:** Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.

**Comments:** Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

**Section 9 - Physical and Chemical Properties**

Physical State: solid  
 Appearance and Odor: white crystals/odorless  
 Odor Threshold:  
 Vapor Pressure: Not applicable.  
 Vapor Density (Air=1): Not applicable.  
 Formula Weight: 192.12  
 Bulk Density: 56.2 lb/ft<sup>3</sup>  
 Specific Gravity (H<sub>2</sub>O=1, at 4 °C): 1.7  
 pH (0.1 N solution): 2.2

Water Solubility: Very soluble  
 Other Solubilities: ether 2.17, chloroform 0.007, amyl alcohol 15.43, amyl acetate 5.98, ethyl acetate 5.28. At 19 °C; soluble in methanol 197 and propanol 62.8. It is insoluble in benzene.  
 Boiling Point: Decomposes  
 Freezing/Melting Point: (153 °C)  
 Viscosity (50% aqueous soln.): 6.5 cP at 77 °F (25 °C)  
 Refractive Index: 1.493 to 1.509 at 68 °F (20 °C)

**Section 10 - Stability and Reactivity**

**Stability:** Citric acid is stable at room temperature in closed containers under normal storage and handling conditions. Anhydrous citric acid readily absorbs moisture from air.  
**Polymerization:** Hazardous polymerization cannot occur.  
**Chemical Incompatibilities:** Include potassium tartrate, alkali and alkaline earth carbonates and bicarbonates, acetates, sulfites, and metal nitrates (potentially explosive reaction). Citric acid corrodes copper, zinc, aluminum and their alloys.  
**Conditions to Avoid:** Dispersing powder in the air, contact with incompatibles, and exposure to heat and ignition sources.  
**Hazardous Decomposition Products:** Thermal oxidative decomposition of citric acid can produce acid, irritating smoke and carbon monoxide, carbon dioxide.

**Section 11- Toxicological Information****Toxicity Data:\***

Rabbit, eye: 750 mg/24 hr caused severe irritation.  
 Rabbit, skin: 500 mg/24 hr caused moderate irritation.

Acute Inhalation Effects:  
 Hu man, inhalation, TC<sub>Lo</sub>: ?? ppm

Acute Oral Effects:  
 Rat, oral, LD 50: 6730 mg/kg  
 Chronic Effects:  
 Carcinogenicity:  
 Mutagenicity: No data available.  
 Teratogenicity: No data available.

\* See NIOSH, RTECS (GE7350000), for additional toxicity data.

**Section 12 - Ecological Information**

**Ecotoxicity:** Acute aquatic effects: 96-hour LC50; Fathead minnow: GT 1000 mg/L. 96-hour LC50; Water flea: GT 1000 mg/L. 48-hour LC50; Golden orfe (minnow): 760 mg/L.  
**Environmental Fate:** This chemical is expected to be readily biodegradable and is not likely to bioconcentrate.  
**Environmental Degradation:**  
**Soil Absorption/Mobility:**

**Section 13 - Disposal Considerations**

**Disposal:** Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.

**Section 14 - Transport Information****DOT Transportation Data (49 CFR 172.101): NOT REGULATED**

Shipping Name:  
 Shipping Symbols:  
 Hazard Class:  
 ID No.:  
 Packing Group:  
 Label:  
 Special Provisions (172.102):

Packaging Authorizations  
 a) Exceptions:  
 b) Non-bulk Packaging:  
 c) Bulk Packaging:

Quantity Limitations  
 a) Passenger, Aircraft, or Railcar:  
 b) Cargo Aircraft Only:

Vessel Stowage Requirements  
 a) Vessel Stowage:  
 b) Other:



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CITRIC ACID, anhydrous

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### Section 15 - Regulatory Information

#### TSCA

CAS# 77-92-9 is listed on the TSCA inventory.

#### Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

#### Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

#### Section 12b

None of the chemicals are listed under TSCA Section 12b.

#### TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

#### SARA

#### Section 302 (RQ)

None of the chemicals in this material have an RQ.

#### Section 302 (TPQ)

None of the chemicals in this product have a TPQ.

#### SARA Codes

CAS # 77-92-9: acute.

#### Section 313

No chemicals are reportable under Section 313.

#### Clean Air Act:

This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

#### Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA: None of the chemicals in this product are considered highly hazardous by OSHA.

#### STATE

CAS# 77-92-9 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California No Significant Risk Level: None of the chemicals in this product are listed.

#### European/International Regulations

European Labeling in Accordance with EC Directives

#### Hazard Symbols:

Not available.

#### Risk Phrases: Phrases:

### Section 16 - Other Information

**Disclaimer:** All information, recommendations and suggestions appearing herein are based upon sources believed to be reliable. However, it is the users responsibility to determine the safety, toxicity and suitability for its own use of this product. WEGO CHEMICAL & MINERAL CORP. DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE USE BY OTHERS OF THIS PRODUCT.

# SAFETY DATA SHEET

**BARCLAY**

## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: **DISPERSALL HP-2500**

Product Use: Boiler Water Treatment

**BARCLAY WATER MANAGEMENT, INC.**

55 Chapel Street

Newton, MA 02458

Telephone: 617-926-3400

Emergency Phone Number

**CHEMTREC**

1-800-424-9300

## 2. HAZARDS IDENTIFICATION

### GHS Ratings:

Oral Toxicity 5

Skin corrosive 2

Eye corrosive 2A

Reversible adverse effects in dermal tissue, Draize score:  $\geq$ 

2.3 &lt; 4.0 or persistent inflammation

Eye irritant: Subcategory 2A, Reversible in 21 days.

### GHS Hazards

H303 May be harmful if swallowed.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

### GHS Precautions

P264 Wash skin thoroughly after handling.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P312 Call a POISON CENTER or doctor/physician if you feel unwell.

P321 Specific treatment (see first aid instructions on SDS)

P362 Take off contaminated clothing and wash before reuse.

P302+P352 IF ON SKIN: Wash with soap and water

P305+P351+P338 IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing

P332+P313 If skin irritation occurs: Get medical advice/attention

P337+P313 Get medical advice/attention

Signal Word: **Warning**

## 3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name / CAS No.	OSHA Exposure Limits	ACGIH Exposure Limits	Other Exposure Limits
Polyacrylic Acid 9003-01-4 10 to 20%			
Sodium polymethacrylate 54193-36-1 5 to 10%			



#### 4. FIRST AID MEASURES

**Inhalation:**

Remove victim to fresh air and keep a rest in a position comfortable for breathing. Get medical attention if any discomfort continues.

**Eye Contact:**

Rinse the eye with water immediately. Immediately flush with plenty of water for up to 15 minutes. Remove any contact lenses and open eyes wide apart. Get medical attention promptly if symptoms occur after washing.

**Skin Contact:**

Immediately remove contaminated clothing. Rinse immediately with plenty of water. Continue to rinse for at least 15 minutes. Get medical attention if irritation persists after washing.

**Ingestion:**

NEVER MAKE AN UNCONSCIOUS PERSON VOMIT OR DRINK FLUIDS! Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit doesn't enter the lungs. Rinse mouth thoroughly. Get medical attention if any discomfort continues.

**Notes to Physician:**

Treat symptomatically.

#### 5. FIRE FIGHTING MEASURES

Flash Point: N/A

LEL:

UEL:

**Flammability of the Product:**

Not Flammable.

**Extinguishing Media:**

Foam, Dry powder, Water spray, Carbon dioxide (CO<sub>2</sub>)

**Further information:**

No data available.

**Specific hazards during fire fighting:**

Thermal decomposition can lead to release of irritating gases and vapours.

**Fire Fighting Methods:**

Standard procedure for chemical fires. Cool containers / tanks with water spray.

**Special protective equipment for fire-fighters:**

In the event of fire, wear self-contained breathing apparatus. Splashproof protective suit.

#### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions:**

Avoid contact with skin and eyes. Wear personal protective equipment (see section 8).

**Environmental precautions:**

Should not be released into the environment. Stop the leakage if possible.

**Methods for cleaning up:**

In case of large spillage, contain by damming up. Collect by pump. Take up mechanically and collect into suitable containers for disposal. Must be disposed of in accordance with local and national regulations. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). After cleaning, flush away traces with water.

#### 7. HANDLING AND STORAGE

**Handling:**

Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation. Wear appropriate personal protective equipment when handling this product. Do not get in eyes or on skin. Rinse immediately contaminated containers, equipment and tools with water.

**Storage:**

Store at room temperature in the original container. Keep tightly closed. Avoid freezing.

**Materials for packaging:**

Suitable material: original container, plastic (PE, PP, PVC), Stainless steel.

#### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Chemical Name / CAS No.	OSHA Exposure Limits	ACGIH Exposure Limits	Other Exposure Limits
-------------------------	----------------------	-----------------------	-----------------------



Polyacrylic Acid 9003-01-4			
Sodium polymethacrylate 54193-36-1			

#### Engineering Controls:

Ensure adequate ventilation.

#### Occupational exposure controls:

Handle in accordance with good industrial hygiene and safety practice.

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

#### Control of environmental exposure:

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

#### Respiratory protection

None under normal use.

#### Hand protection

Glove material: Nitrile rubber disposable gloves.

#### Eye protection

Safety glasses with side-shields. Maintain eyewash fountain in work area.

#### Skin and body protection

Maintain safety shower in work area. If conditions warrant, wear protective clothing such as boots, aprons and coveralls to prevent skin contact.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Vapor Pressure: ND Grams VOC less water: ND Odor: None pH: 4 Freezing point: < 32 F Boiling range: > 212 F Evaporation rate: Similar to Water Explosive Limits: ND  Autoignition temperature: ND Specific Gravity: 1.084659455	Odor threshold: ND Appearance: Clear Liquid Vapor Density: ND Melting point: ND Solubility: Complete in water Flash point: ND Flammability: ND Partition coefficient (n- ND octanol/water): Decomposition temperature: ND
--	--

## 10. STABILITY AND REACTIVITY

#### Chemical stability

Stable under recommended storage conditions.

#### Incompatibility materials

Oxidizing agents, Acids, Bases

Hazardous reactions :

Hazardous polymerization does not occur.

#### Hazardous decomposition products

Thermal decomposition can lead to release of irritating gases and vapours.

## 11. TOXICOLOGICAL INFORMATION

#### Mixture Toxicity

#### Component Toxicity

CAS Number  
None

Description

% Weight

Carcinogen Rating  
N/A

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity** Avoid contaminating waterways.

**Component Ecotoxicity**

Polyacrylic Acid 96 Hr LC50 *Lepomis macrochirus*: 580 mg/L

## 13. DISPOSAL CONSIDERATIONS

**Product:**

Must be disposed of in accordance with local and national regulations.

**Contaminated Packaging:**

Must be disposed of in accordance with local and national regulations. Rinse package before disposal.

## 14. TRANSPORT INFORMATION

<u>Agency</u>	<u>Proper Shipping Name</u>	<u>UN Number</u>	<u>Packing Group</u>	<u>Hazard Class</u>
DOT	Not Regulated			

## 15. REGULATORY INFORMATION

Massachusetts Right To Know Components

- None

New Jersey Right To Know Components

- None

Pennsylvania Right To Know Components

- None

The following chemicals are subject to reporting established by SARA Title III, Section 302.

- None

The following chemicals are subject to reporting established by SARA Title III Section 313.

- None

TSCA - All Components of this product are included in the United States TSCA Chemical Inventory.

SARA 311/312 - Acute Health Hazard.

## 16. OTHER INFORMATION

### Hazardous Material Information System (HMIS)

HEALTH	1
FLAMMABILITY	0
PHYSICAL HAZARD	0
PERSONAL PROTECTION	B

### HMIS & NFPA Hazard Rating

**Legend**

\* = Chronic Health Hazard

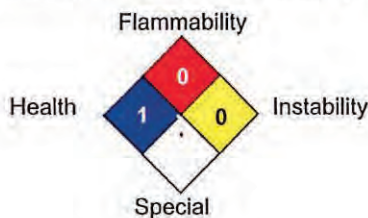
0 = INSIGNIFICANT

1 = SLIGHT

2 = MODERATE

3 = HIGH

### National Fire Protection Association (NFPA)



Date Prepared: 4/27/2015

**Disclaimer:** All information, recommendations and suggestions appearing herein are based upon sources believed to be reliable. However, it is the users responsibility to determine the safety, toxicity and suitability for its own use of this product. Barclay Water Management, Inc. does not assume any liability arising out of the use by others of this product.



# SAFETY DATA SHEET

according to the Globally Harmonized System and US regulation

## Dissolvine D-40

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### 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Dissolvine D-40

Product Use Description : Specific use(s): Chelating agent

Chemical characterization : Diethylenetriaminepentaacetic acid, pentasodium salt, 40% aqueous solution

Company : Akzo Nobel Functional Chemicals LLC  
525 West Van Buren Street  
Chicago IL 60607-3823  
United States

Telephone : +18009067979

Fax : +13125447167

E-mail address : sds\_chelates@akzonobel.com

Emergency telephone : 24 hours emergency response number: +31 57 06 79211

### 2. HAZARDS IDENTIFICATION

#### Emergency Overview

Appearance	liquid
Color	light yellow
Odor	Slightly ammonia like

#### GHS Classification

Corrosive to Metals, Category 1  
Acute toxicity, Category 4, Inhalation  
Skin Irritation, Category 2  
Eye irritation, Category 2A  
Carcinogenicity, Category 2  
Reproductive toxicity, Category 2  
Specific target organ systemic toxicity - repeated exposure, Category 2, Inhalation

#### GHS Label element

Hazard pictograms



Signal Word

: Warning

Hazard Statements

: H290 May be corrosive to metals.  
H315 Causes skin irritation.

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H319 Causes serious eye irritation.  
H332 Harmful if inhaled.  
H351 Suspected of causing cancer.  
H361 Suspected of damaging fertility or the unborn child.  
H373 May cause damage to organs through prolonged or repeated exposure if inhaled.

## Precautionary Statements

### : Prevention:

P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and understood.  
P234 Keep only in original container.  
P260 Do not breathe mist, vapors or spray.  
P264 Wash skin thoroughly after handling.  
P271 Use only outdoors or in a well-ventilated area.  
P280 Wear protective gloves/ eye protection/ face protection.  
P281 Use personal protective equipment as required.

### Response:

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.  
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
P332 + P313 If skin irritation occurs: Get medical advice/ attention.  
P337 + P313 If eye irritation persists: Get medical advice/ attention.  
P362 Take off contaminated clothing and wash before reuse.  
P390 Absorb spillage to prevent material damage.

### Storage:

P405 Store locked up.

### Disposal:

P501 Dispose of contents/container in accordance with local regulation.

## Potential Health Effects

### Inhalation

: Inhalation of aerosols may cause irritation to mucous membranes.  
Thermal decomposition can lead to release of irritating gases and vapors.  
Harmful if inhaled.

### Skin

: Causes skin irritation.

### Eyes

: Causes serious eye irritation.

### Ingestion

: May cause irritation of the mucous membranes.

### Aggravated Medical Condition

: None known.

### Symptoms of Overexposure

: The symptoms and effects are as expected from the hazards as shown in section 2. No specific product related symptoms are known.

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### Carcinogenicity:

#### IARC

: Group 2B: Possibly carcinogenic to humans  
Nitrilotriacetic acid, trisodium salt 5064-31-3

#### OSHA

: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

#### NTP

: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

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## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### Hazardous Ingredients

Chemical Name	CAS-No.	Classification	Concentration [%]
Diethylenetriaminepentaacetic acid, pentasodium salt	140-01-2	Acute Tox. 4; H332 Repr. 2; H361 STOT RE 2; H373	30 - 50
Nitrilotriacetic acid, trisodium salt	5064-31-3	Acute Tox. 4; H302 Eye Irrit. 2A; H319 Carc. 2; H351	1 - 5
Sodium hydroxide	1310-73-2	Met. Corr. 1; H290 Skin Corr. 1A; H314 Eye Dam. 1; H318 Aquatic Acute 3; H402	0.5 - 2

For the full text of the H-Statements mentioned in this Section, see Section 16.

## 4. FIRST AID MEASURES

- General advice : Move out of dangerous area.  
Consult a physician.  
Show this material safety data sheet to the doctor in attendance.
- Inhalation : If breathed in, move person into fresh air.  
Consult a physician after significant exposure.
- Skin contact : Take off contaminated clothing and shoes immediately.  
Rinse immediately with plenty of water.  
If skin irritation persists, call a physician.
- Eye contact : Rinse with plenty of water.  
Remove contact lenses.  
Protect unharmed eye.  
Keep eye wide open while rinsing.  
Obtain medical attention.
- Ingestion : Clean mouth with water and drink afterwards plenty of water.  
Never give anything by mouth to an unconscious person.  
Obtain medical attention.

### Notes to physician

- Symptoms : The symptoms and effects are as expected from the hazards



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as shown in section 2. No specific product related symptoms are known.

Treatment : Treat symptomatically.

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## 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Specific hazards during fire fighting / Specific hazards arising from the chemical : Water spray may be ineffective unless used by experienced firefighters.  
Do not allow run-off from fire fighting to enter drains or water courses.
- Combustion products : No hazardous combustion products are known
- Special protective equipment for fire-fighters : In the event of fire, wear self-contained breathing apparatus.
- Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.  
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

See also Section 9. Physical and chemical properties: Safety data

---

## 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions : Use personal protective equipment.  
Wear respiratory protection.  
Ensure adequate ventilation.
- Environmental precautions : Do not flush into surface water or sanitary sewer system.  
If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods for cleaning up / Methods for containment : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).  
Keep in suitable, closed containers for disposal.
- Additional advice : For personal protection see section 8.

---

## 7. HANDLING AND STORAGE

- Handling
- Advice on safe handling : For personal protection see section 8.  
Avoid formation of aerosol.  
Do not breathe vapors or spray mist.  
Smoking, eating and drinking should be prohibited in the application area.  
Provide sufficient air exchange and/or exhaust in work rooms.  
Dispose of rinse water in accordance with local and national regulations.  
Avoid contact with skin, eyes and clothing.

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Advice on protection against fire and explosion : Normal measures for preventive fire protection.

## Storage

Requirements for storage areas and containers : Prevent unauthorized access.  
Keep container tightly closed in a dry and well-ventilated place.  
Store in closed dark containers made of anti-corrosive material.

Other data : No decomposition if stored and applied as directed.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Exposure Guidelines

#### Ingredients with workplace control parameters

Ingredients	CAS-No.	Value	Control parameters	Update	Basis	Form of exposure
Sodium hydroxide	1310-73-2	CEIL	2 mg/m3	1994-09-01	ACGIH	
		C	2 mg/m3	2013-03-01	ACGIH	
	Further information	:	Upper Respiratory Tract irritation Eye irritation Skin irritation			
		C	2 mg/m3	2013-10-08	NIOSH REL	
		TWA	2 mg/m3	1997-08-04	OSHA Z-1	
		C	2 mg/m3	1989-01-19	OSHA P0	

ACGIH: American Conference of Governmental Industrial Hygienists  
BEI: Biological Exposure Index  
MAC: Maximum Allowable Concentration  
NIOSH: National Institute for Occupational Safety and Health  
OEL: OEL: Occupational exposure limit.  
STEL: Short term exposure limit  
TWA: Time Weighted Average

### Hazardous substance

Substance name	CAS-No.	Value	Control parameters	Basis	Update
Sodium hydroxide	1310-73-2	Immediately Dangerous to Life or Health Concentration Value	10 mg/m3	US IDLH	1995-03-01
	Further information	:	Immediately Dangerous to Life or Health Concentrations (IDLH)		

### Engineering measures

Effective exhaust ventilation system  
Ensure that eyewash stations and safety showers are close to the workstation location.

### Personal protective equipment



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Eye/face protection	: Tightly fitting safety goggles
Skin and body protection	: Protective suit
Respiratory protection	: In the case of vapor or aerosol formation use a respirator with an approved filter. Filter A
Hygiene measures	: Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

## Environmental exposure controls

General advice	: Do not flush into surface water or sanitary sewer system. If the product contaminates rivers and lakes or drains inform respective authorities.
----------------	--

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Appearance

Form	: liquid
Color	: light yellow
Odor	: Slightly ammonia like
Odor Threshold	: not determined

### Safety data

pH	: 11 - 12 1% (water)
Melting point	: Not applicable
Boiling point/boiling range	: 105 - 110 °C
Flash point	: not (in)flammable Product is not flammable (aqueous)
Evaporation rate	: No data available
Flammability (solid, gas)	: Not applicable
Flammability (liquids)	: Not classified as a flammability hazard
Lower explosion limit	: Not applicable
Upper explosion limit	: Not applicable
Vapor pressure	: similar to water
Relative vapor density	: similar to water
Relative density	: 1.15 - 1.5

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Bulk density	: Not applicable
Water solubility	: completely miscible
Solubility in other solvents	: No data available
Partition coefficient: n-octanol/water	: log Pow: < 0
Autoignition temperature	: Not applicable
Decomposition temperature	: No data available
Viscosity, dynamic	: 20 - 150 mPa.s at 20 °C
Viscosity, kinematic	: 10 - 140 mm <sup>2</sup> /s at 20 °C
Explosive properties	: Not explosive
Oxidizing properties	: Not classified as oxidizing.
Corrosive to metals	: Corrosive to metals

This material safety datasheet only contains information relating to safety and does not replace any product information or product specification.

## 10. STABILITY AND REACTIVITY

Conditions to avoid	: None known.
Materials to avoid	: Aluminum Zinc Copper alloys Copper Nickel
Hazardous decomposition products	: Carbon oxides nitrogen oxides (NO <sub>x</sub> )
Thermal decomposition	: No data available
Reactivity	: Stable under normal conditions.
Chemical stability	: Stable under recommended storage conditions.
Hazardous reactions	: No dangerous reaction known under conditions of normal use.

## 11. TOXICOLOGICAL INFORMATION

### PRODUCT INFORMATION:

#### Toxicology Assessment

Further information	: Suspected of damaging fertility or the unborn child.
---------------------	--

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May cause damage to organs through prolonged or repeated exposure.

## Test result

Acute oral toxicity : Acute toxicity estimate: > 5,000 mg/kg  
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate : 3.75 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: Calculation method

## Carcinogenicity:

IARC : Group 2B: Possibly carcinogenic to humans  
Nitrilotriacetic acid, trisodium salt 5064-31-3

OSHA : No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP : No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

## TOXICOLOGY DATA FOR THE INGREDIENTS:

### Toxicology Assessment

#### Component: Diethylenetriaminepentaacetic acid, pentasodium salt

CMR effects : Reproductive toxicity: Suspected of damaging fertility.  
Suspected of damaging the unborn child., Suspected human reproductive toxicant

#### Component: Nitrilotriacetic acid, trisodium salt

CMR effects : Carcinogenicity: Limited evidence of a carcinogenic effect.

#### Component: Sodium hydroxide

CMR effects : Mutagenicity: In vivo tests did not show mutagenic effects,  
Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

## Test result

#### Component: Diethylenetriaminepentaacetic acid, pentasodium salt

Acute oral toxicity : LD0: > 5,000 mg/kg  
Species: Rat  
Method: OECD Test Guideline 401



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	Literature data.
Acute inhalation toxicity	: LC50 : > 1 - 5 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: Acute toxicity estimate Literature data.
Skin irritation	: Species: Rabbit Result: No skin irritation Method: OECD Test Guideline 404 Exposure time: 4 h Literature data.
Eye irritation	: Species: Rabbit Result: No eye irritation Method: OECD Test Guideline 405 Exposure time: 24 h Literature data.
Sensitization	: Buehler Test Species: Guinea pig Result: Does not cause skin sensitization. Method: OECD Test Guideline 406 Literature data.
Germ cell mutagenicity Genotoxicity in vitro	: Ames test Salmonella typhimurium Result: negative Method: OECD Test Guideline 471 Literature data.
Reproductive toxicity/Development/Teratog enicity	: Species: Rat Application Route: Oral General Toxicity Maternal: NOAEL (No observed adverse effect level): 400 mg/kg body weight/day Teratogenicity: NOAEL (No observed adverse effect level): 100 mg/kg body weight/day Method: OECD Test Guideline 414 GLP: yes Literature data.
Target Organ Systemic Toxicant - Repeated exposure	: Routes of exposure: Inhalation May cause damage to organs through prolonged or repeated exposure.

## Component: Nitrilotriacetic acid, trisodium salt

Acute oral toxicity	: LD50: 1,740 mg/kg Species: Rat
Eye irritation	: Result: Irritating to eyes.



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## Component: Sodium hydroxide

Skin irritation : Result: Causes severe burns.

Eye irritation : Result: Risk of serious damage to eyes.

Sensitization : Result: Does not cause skin sensitization.

Germ cell mutagenicity  
Genotoxicity in vitro : In vitro tests did not show mutagenic effects

## 12. ECOLOGICAL INFORMATION

### PRODUCT INFORMATION:

#### Ecotoxicology Assessment

Additional ecological information : None known.

#### Further information on ecology

#### Hazardous to the ozone layer

Regulation : 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances

Remarks : This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

### INGREDIENTS:

#### Ecotoxicology Assessment

## Component: Sodium hydroxide

Chronic aquatic toxicity : This product has no known ecotoxicological effects.

#### Test result

## Component: Diethylenetriaminepentaacetic acid, pentasodium salt

#### Ecotoxicity effects

Toxicity to fish : NOEC: 1,000 mg/l  
Exposure time: 96 h  
Species: Oncorhynchus mykiss (rainbow trout)  
Method: OECD Test Guideline 203  
Literature data.

Toxicity to daphnia and other aquatic invertebrates : LC50: 245 mg/l  
Exposure time: 48 h  
Species: Daphnia  
Method: OECD Test Guideline 202

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Literature data.

Toxicity to algae : NOEC: 400 mg/l  
Exposure time: 23 d  
Species: *Scenedesmus quadricauda* (Green algae)  
Literature data.  
Information given is based on data obtained from similar substances.

Toxicity to bacteria : EC50: > 500 mg/l  
Exposure time: 30 min  
Species: activated sludge  
Method: OECD Test Guideline 209  
Literature data.

Toxicity to fish (Chronic toxicity) : NOEC: 100 mg/l  
Exposure time: 28 d  
Test Type: semi-static test.  
Literature data.

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 67 mg/l  
Exposure time: 18 d  
Species: *Daphnia*  
Method: OECD Test Guideline 211  
Literature data.

### Elimination information (persistence and degradability)

Biodegradability : Result: Not readily biodegradable.  
Method: OECD Test Guideline 301F  
GLP: yes  
Literature data.

### Component: Nitrilotriacetic acid, trisodium salt

#### Ecotoxicity effects

Toxicity to fish : LC50: > 100 mg/l  
Exposure time: 96 h  
Species: *Pimephales promelas* (fathead minnow)

### Elimination information (persistence and degradability)

Bioaccumulation : Bioaccumulation is unlikely.

Mobility : Adsorption to the solid soil particles is not expected.

Biodegradability : Result: Readily biodegradable.

### Further information on ecology

Biochemical Oxygen Demand (BOD) : No data available

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## Component: Sodium hydroxide

### **Ecotoxicity effects**

Toxicity to daphnia and other aquatic invertebrates : EC50: 40.4 mg/l  
Exposure time: 48 h  
Species: Ceriodaphnia (water flea)  
Test Type: Immobilization

### **Elimination information (persistence and degradability)**

Bioaccumulation : Does not bioaccumulate.  
Mobility : Can be leached out from soil.  
Distribution among environmental compartments : Transport to air is not expected.  
Biodegradability : Result: Not applicable

### **Further information on ecology**

Biochemical Oxygen Demand (BOD) : No data available

---

## **13. DISPOSAL CONSIDERATIONS**

Product : Do not dispose of waste into sewer.  
Do not contaminate ponds, waterways or ditches with chemical or used container.  
Hazardous waste  
Dispose of contents/container in accordance with local regulation.  
Contaminated packaging : Empty remaining contents.  
Dispose of as unused product.

---

## **14. TRANSPORT INFORMATION**

### **International Regulation**

IATA-DGR  
UN/ID No. : UN 3267  
Proper shipping name : Corrosive liquid, basic, organic, n.o.s.  
(Diethylenetriaminepentaacetic acid, pentapotassium salt)  
Class : 8  
Packing group : III  
Labels : 8  
Packing instruction (cargo aircraft) : 856  
Packing instruction (passenger aircraft) : 852  
Packing instruction (LQ) : Y841  
Environmentally hazardous : no



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IMDG-Code  
UN number : UN 3267  
Proper shipping name : CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S.  
(Diethylenetriaminepentaacetic acid, pentapotassium salt)  
Class : 8  
Packing group : III  
Labels : 8  
EmS Code : F-A, S-B  
Marine pollutant : no

## Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

## Domestic regulation

### 49 CFR

Not regulated as a dangerous good

## 15. REGULATORY INFORMATION

### Notification status

TSCA : YES. All chemical substances in this product are either listed on the TSCA Inventory or in compliance with a TSCA Inventory exemption.  
DSL : YES. All components of this product are on the Canadian DSL.  
AICS : YES. On the inventory, or in compliance with the inventory  
NZIoC : NO. On the inventory, or in compliance with the inventory  
ENCS : YES. On the inventory, or in compliance with the inventory  
ISHL : YES. On the inventory, or in compliance with the inventory  
KECI : YES. On the inventory, or in compliance with the inventory  
PICCS : YES. On the inventory, or in compliance with the inventory  
IECSC : YES. On the inventory, or in compliance with the inventory

For explanation of abbreviations, see section 16.

### TSCA list

TSCA 5(a)(2) : No substances are subject to a Significant New Use Rule.  
TSCA 12(b) : No substances are subject to TSCA 12(b) export notification requirements.

## EPCRA - Emergency Planning and Community Right-to-Know

### CERCLA Reportable Quantity

Ingredients	CAS-No.	Component RQ (lbs)
Sodium hydroxide	1310-73-2	1000 lbs

### SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Chronic Health Hazard  
Acute Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

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## SARA 313

: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

## Clean Air Act

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).

This product does not contain any chemicals subject to disclosure and listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).

## Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

Sodium hydroxide	1310-73-2
------------------	-----------

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

Sodium hydroxide	1310-73-2
------------------	-----------

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

## US State Regulations

### Massachusetts Right To Know

Nitrilotriacetic acid, trisodium salt	5064-31-3	1 - 5 %
Sodium hydroxide	1310-73-2	1 - 5 %

### Pennsylvania Right To Know

Diethylenetriaminepentaacetic acid, pentasodium salt	140-01-2	30 - 50 %
Sodium hydroxide	1310-73-2	1 - 5 %

### New Jersey Right To Know

Diethylenetriaminepentaacetic acid, pentasodium salt	140-01-2	30 - 50 %
Nitrilotriacetic acid, trisodium salt	5064-31-3	1 - 5 %
Sodium hydroxide	1310-73-2	1 - 5 %

### California Prop. 65

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

## 16. OTHER INFORMATION

### Full text of H-Statements

H290	: May be corrosive to metals.
H302	: Harmful if swallowed.
H314	: Causes severe skin burns and eye damage.
H318	: Causes serious eye damage.
H319	: Causes serious eye irritation.
H332	: Harmful if inhaled.
H351	: Suspected of causing cancer.
H361	: Suspected of damaging fertility or the unborn child.
H373	: May cause damage to organs through prolonged or repeated



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H402 exposure if inhaled.  
: Harmful to aquatic life.

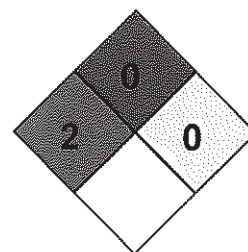
## Full text of other abbreviations

(Q)SAR - (Quantitative) Structure Activity Relationship; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CPR - Controlled Products Regulations; DIN - Standard of the German Institute for Standardisation; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISO - International Organisation for Standardization; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TDG - Transportation of Dangerous Goods; UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System; DSL - Domestic Substances List (Canada); KECI - Korea Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); AICS - Australian Inventory of Chemical Substances; IECSC - Inventory of Existing Chemical Substances in China; ENCS - Existing and New Chemical Substances (Japan); ISHL - Industrial Safety and Health Law (Japan); PICCS - Philippines Inventory of Chemicals and Chemical Substances; NZIoC - New Zealand Inventory of Chemicals; TCSI - Taiwan Chemical Substance Inventory; CMR - Carcinogen, Mutagen or Reproductive Toxicant; GLP - Good Laboratory Practice

## Further information

**HMIS Classification** : Health Hazard: 2  
Chronic Health Hazard: \*  
Flammability: 0  
Physical hazards: 0

**NFPA Classification** : Health Hazard: 2  
Fire Hazard: 0  
Reactivity Hazard: 0



## Notification status explanation

REACH 1907/2006 (EU)  
TSCA United States TSCA Inventory



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DSL	Canadian Domestic Substances List (DSL)
AICS	Australia Inventory of Chemical Substances (AICS)
NZIoC	New Zealand. Inventory of Chemical Substances
ENCS	Japan. ENCS - Existing and New Chemical Substances Inventory
ISHL	Japan. ISHL - Inventory of Chemical Substances
KECI	Korea. Korean Existing Chemicals Inventory (KECI)
PICCS	Philippines Inventory of Chemicals and Chemical Substances (PICCS)
IECSC	China. Inventory of Existing Chemical Substances in China (IECSC)

## Further information

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The information in this material safety data sheet should be provided to all who will use, handle, store, transport or otherwise be exposed to this product. The user must determine the appropriate measures that need to be implemented for the use and handling of this product in the context of the user's operations and use of this product. The information contained herein supersedes all previously issued bulletins on the subject matter covered. If the date on this document is more than three years old, call to make certain that this sheet is current. No warranty is made as to the product's merchantability or fitness for any particular purpose, or that any suggested use will not infringe any patent. User must determine for himself, by preliminary tests or otherwise, the suitability of this product for his purposes, including mixing with other products. Nothing contained herein shall be construed as granting or extending any license under any patent.

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

# Safety Data Sheet

according to 29 CFR 1910.1200



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### SECTION 1: Identification of the substance/preparation and company

#### 1.1 Product identifier

**Evo Soft SFBM**

#### 1.2 Relevant Identified uses of the substance or mixture and uses advised against

Use pattern :  
Textile auxiliary

#### 1.3 Details of the supplier of the safety data sheet

Dystar L.P.  
Pine Brook III

9844 Southern Pine Blvd  
Charlotte, NC 28273, USA  
Telephone no. (800) 439-7827  
Telefax no. (704) 561-3098

#### 1.4 Emergency telephone number

Emergency telephone number: (800) 424-9300

### SECTION 2: Hazard(s) Identification

#### 2.1 Classification of the Substance or Mixture

Classification of the chemical in accordance with paragraph (d) of §1910.1200

Causes serious eye irritation.

Classification of the Substance or Mixture

Serious eye damage/eye irritation: Irritating to eyes, Cat. 2

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### 2.2 Label elements

#### Pictograms:



exclamation mark

#### Signal word:

Warning

#### Hazard Statements:

H319 Causes serious eye irritation.

#### Precautionary Statements (Prevention):

P280 Wear protective gloves/protective clothing/eye protection/face protection.

#### Precautionary Statements (Response):

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313 If eye irritation persists: Get medical advice/attention.

#### Precautionary Statements (Storage):

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

#### Precautionary Statements (Disposal):

P501 Dispose of contents/container to waste treatment in accordance with national regulations.



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### 2.3 Other hazards

If applicable in this section are given hazards which are not part of the overall classification but can contribute to the hazards which may be associated with the substance or mixture.

This product may be mildly irritating to skin with prolonged exposure.

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Not applicable

### 3.2 Mixtures

#### Chemical characterization

polyethylene dispersion, Carboxylic acid ester, emulsifiers

#### Hazardous Ingredients (GHS) according to 29 CFR 1910.1200

alcohol ethoxylate

Content:	< 1.25 %	Acute Tox. 4 (oral)	H302
		Eye Dam. 1	H318

fatty alcohol ethoxylated

Content:	< 1 %	Eye Irrit. 2	H319
		Skin Irrit. 2	H315

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

General information: Take off immediately all contaminated clothing.

After inhalation: Upon inhalation of aerosol/vapour/dust: Take the patient into the fresh air; if there is difficulty in breathing, medical advice is required.

After contact with skin: Cleansing with plenty of water, soap or other non-irritating cleansing agents.

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After contact with eyes: Contamination of the eyes must be treated by thorough irrigation with water, with the eyelids held open. Eventually a doctor (or eye specialist) should be consulted.

After ingestion: If the product is swallowed, the patient must at once drink water repeatedly, if possible with the addition of activated carbon. If the patient feels unwell, seek medical advice.

### 4.2 Most important symptoms and effects, both acute and delayed

Please see hazard statements in section 2.2 if given and information in this section if stated.

### 4.3 Indication of any immediate medical attention and special treatment needed

Please see precautionary statements in section 2.2 as well as first aid information in this section if stated.

---

## SECTION 5: Fire-fighting measures

### 5.1 Extinguishing media

Suitable extinguishing media: water mist, foam, dry powder, CO<sub>2</sub>

Extinguishing media that must not be used for safety reasons: not determined

### 5.2 Special hazards arising from the substance or mixture

not determined

### 5.3 Advice for firefighters

Special protective equipment for firefighting: Firemen have to wear self-contained breathing apparatus.

Further information: Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations.

---

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions: Use the necessary personal protection equipment during any work.

### 6.2 Environmental precautions

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Environmental precautions: Do not empty into drains or waters.

### 6.3 Methods and material for containment and cleaning up

Methods for cleaning up/taking up: Take up with absorbent material and fill into a closable container.

### 6.4 Reference to other sections

Additional information: For further disposal measures see chapter 13.

---

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Advice on safe handling: No special measures required.

Advice on protection against fire and explosion: No special measures required.

### 7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels: Requirements on the storage quality according to WGK: 2

Further information on storage conditions: Protect from frost.

Storage stability: not determined

### 7.3 Specific end use(s)

not determined

---

## SECTION 8: Exposure controls/personal protection

### 8.1 Exposure limits

Ingredients with occupational exposure limits to be monitored

### 8.2 Exposure controls



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General protective measures: Do not breathe vapour/spray. Avoid contact with eyes and skin. Take off immediately all contaminated clothing.

Hygiene measures: Do not eat, drink or smoke at work.  
Wash hands before breaks and at end of work and use skin-protecting ointment.  
Keep away from food and drink stuffs.

Respiratory protection :	In case of insufficient ventilation, wear suitable respiratory equipment.
Hand protection :	Wear suitable gloves e.g. of PVC or nitrile rubber. In the event of contamination, change protective gloves immediately. Avoid skin contact with the wetted surfaces of the protective gloves.
Eye protection :	safety glasses with side protection shield
Body protection :	Wear protective clothing.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Form :	liquid
Colour :	white to beige
Odour :	mild
Melting point	not determined
Boiling point :	100 °C
Flash point :	> 100 °C
Ignition temperature :	not determined
flammability :	not determined
Lower explosion limit :	not determined

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Upper explosion limit :	not determined
Vapour pressure :	not determined
Density :	approx. 1.0 g/cm <sup>3</sup> (20 °C)
Solubility in water :	miscible
pH value :	3 - 5 (50 g/l)
Octanol/water partition coefficient (log Pow) :	not determined
Viscosity (dynamic) :	not determined
Viscosity (kinematic) :	not determined
Viscosity (flow time) :	not determined

#### 9.2 Other information

Combustion number :	not determined
Dust explosion class :	not determined
Bulk density :	not determined
Further information (phys.-chem.)	not necessary

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

No hazardous reactions when stored and handled according to prescribed instructions.

### 10.2 Chemical stability

Thermal decomposition No thermal decomposition when stored and handled correctly.

### 10.3 Possibility of hazardous reactions

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Hazardous reactions: No hazardous reaction when used as directed.

Hazardous decomposition products: Not applicable

#### 10.4 Conditions to avoid

For avoidable conditions: not necessary

#### 10.5 Incompatible materials

For avoidable materials: not necessary

#### 10.6 Hazardous decomposition products

Not applicable

### SECTION 11: Toxicological information

#### 11.1 Information on toxicological effects

Acute oral toxicity :	LD50 > 2,000 mg/kg (rat)
Acute inhalation toxicity :	not determined
Acute dermal toxicity :	not determined
Irritant effect on skin :	non-irritant
Irritant effect on eyes :	irritant
Sensitization :	not determined
Repeated dose toxicity	not determined
Mutagenicity:	not determined
Teratogenicity :	not necessary
Carcinogenicity :	not necessary

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### **11.2 Information on toxicological effects**

Primary route of exposure

Inhalation: Yes

Skin Absorption: No

Ingestion: Yes

Skin Contact: Yes

Eye Contact: Yes

Effects of overexposure

Overexposure to mist or vapor generated during processing may cause respiratory irritation.

### **11.3 Carcinogen status**

IARC: No

NTP: No

OSHA: No

ACGIH: No

CalProp65: No

---

## **SECTION 12: Ecological information**

### **12.1 Toxicity**

Fish toxicity : not determined

Daphnia toxicity : not determined

Algae toxicity : not determined

Bacteria toxicity : not determined

### **12.2 Persistence and degradability**

Physico-chemical eliminability : not determined

Biodegradability : not determined

Behaviour in environmental compartments: not determined



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Dissolved Organic carbon (DOC) : not determined

Chemical oxygen demand (COD) : 383,000 mg/l

Biochemical oxygen demand (BOD5): 91,500 mg/l

Remarks: Product does not add to the AOX-value of the sewage. (DIN EN 1485)  
The product does not contain heavy metals in concentrations of concern for waste water.

**12.3 Bioaccumulative potential**

not determined

**12.4 Mobility in soil**

not determined

**12.5 Results of PBT and vPvB assessment**

not determined

**12.6 Other adverse effects**

not determined

---

**SECTION 13: Disposal considerations**

**13.1 Waste treatment methods**

Product: If utilization or recycling of the product is not possible, it should be disposed of according to the local regulations and laws, e. g. by incineration in a suitable plant.

Uncleaned packaging: Soiled, empty containers are to be treated in the same way as the contents.

---

**SECTION 14: Transport information**

**14.1 Transport classification**

**D.O.T. Information**

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CFR	Non dangerous goods
IMDG	Non dangerous goods
IATA_C	Non dangerous goods
IATA_P	Non dangerous goods

### 14.2 Special precautions for user

Irritating to the eyes

Weak odour

Keep separated from foodstuffs.

### 14.3 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

No transport in bulk according to Annex II of MARPOL 73/78 and the IBC code foreseen for this substance or mixture.:

## SECTION 15: Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

#### US Regulations

##### TSCA

The components of this product are listed on the TSCA inventory.

##### Sara 313

This product is not subject to SARA Title III Section 313 reporting requirements under 40 CFR 372..

##### Sara 312

Immediate (acute) health hazard	Yes
Delayed (chronic) health hazard	No
Fire hazard	No
Sudden Release of Pressure	No
Reactivity	No

HMIS code: 1 - 0 - 0 - B



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**15.2 Chemical safety assessment**

not determined

**SECTION 16: Other information**

Text of all shortcuts referred to in sections 2 and 3:

H302 Harmful if swallowed.

H315 Causes skin irritation.

H318 Causes serious eye damage.

H319 Causes serious eye irritation.

Acute Tox. 4 (oral) Acute Toxicity: Cat. 4 (oral)

Eye Dam. 1 Serious eye damage/eye irritation: Irreversible effects on the eye, Cat. 1

Eye Irrit. 2 Serious eye damage/eye irritation: Irritating to eyes, Cat. 2

Skin Irrit. 2 Skin corrosion/irritation: Irritant, Cat. 2

This information is based on our present state of knowledge. It should not therefore be construed as guaranteeing specific properties of the products described or their suitability for a particular application.

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### Ethyl Ether, Anhydrous, ACS

#### SECTION 1: Identification of the substance/mixture and of the supplier

**Product name:** Ethyl Ether, Anhydrous, ACS

**Manufacturer/Supplier Trade name:**

**Manufacturer/Supplier Article number:** S25903

**Recommended uses of the product and restrictions on use:**

**Manufacturer Details:**

AquaPhoenix Scientific, Inc  
9 Barnhart Drive  
Hanover, PA 17331  
(717) 632-1291

**Supplier Details:**

Fisher Science Education  
6771 Silver Crest Road, Nazareth, PA 18064  
(724)517-1954

**Emergency telephone number:**

**Fisher Science Education**  
Emergency Telephone No.: 800-535-5053

#### SECTION 2: Hazards identification

**Classification of the substance or mixture:**



**Health hazard**  
Aspiration hazard, category 1



**Flammable**  
Flammable liquids, category 1



**Irritant**  
Acute toxicity (oral, dermal, inhalation), category 4  
Eye irritation, category 2A  
Specific target organ toxicity following single exposure, category 3

Flammable liquids (Category 1).  
Acute toxicity (Category 4).  
Eye irritation (Category 2A).  
Specific target organ toxicity - single exposure (Category 3).  
Aspiration hazard (Category 1).

**Signal word:** Danger

**Hazard statements:**

Extremely flammable liquid and vapour.  
May be fatal if swallowed and enters airways.  
Harmful if swallowed.  
Causes serious eye irritation.  
May cause drowsiness or dizziness.

**Precautionary statements:**



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### Ethyl Ether, Anhydrous, ACS

If medical advice is needed, have product container or label at hand.  
Keep out of reach of children.  
Read label before use.  
Keep away from heat/sparks/open flames/hot surfaces. No smoking.  
Use personal protective equipment as required.  
Wash skin thoroughly after handling.  
Do not eat, drink or smoke when using this product.  
Avoid breathing dust/fume/gas/mist/vapours/spray.  
Use only outdoors or in a well-ventilated area.  
Keep container tightly closed.  
Ground/bond container and receiving equipment.  
Use explosion-proof electrical/ventilating/light/equipment.  
Use only non-sparking tools.  
Take precautionary measures against static discharge.  
Wear protective gloves/protective clothing/eye protection/face protection.  
Obtain special instructions before use.  
Do not handle until all safety precautions have been read and understood.  
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.  
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing, Rinse skin with water/shower.  
IF exposed or concerned: Get medical advice/attention.  
Do NOT induce vomiting.  
In case of fire: Use agents recommended in section 5 for extinction.  
Store in a well ventilated place. Keep cool.  
Store locked up.  
Dispose of contents and container to an approved waste disposal plant.

Other Non-GHS Classification: None

### SECTION 3: Composition/information on ingredients

Ingredients:		
CAS 60-29-7	Ethyl Ether	100 %
Percentages are by weight		

### SECTION 4: First aid measures

#### Description of first aid measures

##### After inhalation:

Loosen clothing as necessary and position individual in a comfortable position. Move exposed to fresh air. Give artificial respiration if necessary. If breathing is difficult give oxygen. Get medical assistance if cough or other symptoms appear.

##### After skin contact:

Rinse/flush exposed skin gently using soap and water for 15-20 minutes. Seek medical advice if discomfort or irritation persists.

##### After eye contact:

Protect unexposed eye. Rinse/flush exposed eye(s) gently using water for 15-20 minutes. Remove contact lens(es) if able to do so during rinsing. Seek medical attention if irritation persists or if concerned.

##### After swallowing:



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### Ethyl Ether, Anhydrous, ACS

Rinse mouth thoroughly. Do not induce vomiting. Seek medical attention if irritation, discomfort, or vomiting persists. Never give anything by mouth to an unconscious person.

#### Most important symptoms and effects, both acute and delayed:

burning sensation. Irritation. Headache. Nausea. Shortness of breath.

#### Indication of any immediate medical attention and special treatment needed:

If seeking medical attention provide SDS document to physician. Physician should treat symptomatically.

### SECTION 5: Firefighting measures

#### Extinguishing media

##### Suitable extinguishing agents:

Use dry chemical, chemical foam, carbon dioxide, or alcohol-resistant foam.

##### Unsuitable extinguishing agents:

Water may be ineffective because it may not cool this material below its flash point.

#### Special hazards arising from the substance or mixture:

Thermal decomposition can lead to release of irritating gases and vapors. Vapors may form an explosive mixture with air. Vapors may cause flash back.

#### Advice for firefighters:

##### Protective equipment:

Wear protective eyewear, gloves, and clothing. Refer to Section 8. Use NIOSH-approved respiratory protection/breathing apparatus.

##### Additional information (precautions):

Avoid inhaling gases, fumes, dust, mist, vapor, and aerosols. Avoid contact with skin, eyes, and clothing.

### SECTION 6: Accidental release measures

#### Personal precautions, protective equipment and emergency procedures:

Ensure adequate ventilation. Ensure that air-handling systems are operational.

#### Environmental precautions:

Should not be released into environment. Prevent from reaching drains, sewer, or waterway.

#### Methods and material for containment and cleaning up:

Wear protective eyewear, gloves, and clothing. Refer to Section 8. Always obey local regulations. Containerize for disposal. Refer to Section 13. If necessary, use trained response staff or contractor. Evacuate personnel to safe areas. Keep in suitable closed containers for disposal.

#### Reference to other sections: None

### SECTION 7: Handling and storage

#### Precautions for safe handling:

Avoid contact with skin, eyes, and clothing. Follow good hygiene procedures when handling chemical materials. Refer to Section 8. Follow proper disposal methods. Refer to Section 13. Do not eat, drink, smoke, or use personal products when handling chemical substances. Ground and bond containers when transferring material. Do not get in eyes, on skin, or on clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep away from heat, sparks and flame. Do not ingest or inhale. Prevent build-up of vapors to explosive concentration. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

#### Conditions for safe storage, including any incompatibilities:

Store in a cool location. Keep away from food and beverages. Protect from freezing and physical damage. Keep away from open flames, hot surfaces and sources of ignition. Provide ventilation for containers. Keep container tightly sealed. Store away from incompatible materials.



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### Ethyl Ether, Anhydrous, ACS

#### SECTION 8: Exposure controls/personal protection



<b>Control Parameters:</b>	60-29-7, Ethyl Ether, OSHA PEL: 400 ppm TWA; 1200 mg/m <sup>3</sup> TWA. 60-29-7, Ethyl Ether, OSHA STEL: 500 ppm 1,500 mg/m <sup>3</sup> .
<b>Appropriate Engineering controls:</b>	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor and mists below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above. Use adequate general or local explosion-proof ventilation.
<b>Respiratory protection:</b>	Not required under normal conditions of use. Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. When necessary use NIOSH approved breathing equipment.
<b>Protection of skin:</b>	Select glove material impermeable and resistant to the substance. Select glove material based on rates of diffusion and degradation. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Use proper glove removal technique without touching outer surface. Avoid skin contact with used gloves. Wear protective clothing. Splash protection Material: Fluorinated rubber Minimum layer thickness: 0.7 mm Break through time: 30 min Material tested: Vitoject®.
<b>Eye protection:</b>	Wear equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses or goggles are appropriate eye protection.
<b>General hygienic measures:</b>	Perform routine housekeeping. Wash hands before breaks and at the end of work. Avoid contact with skin, eyes, and clothing. Before wearing wash contaminated clothing.

#### SECTION 9: Physical and chemical properties

<b>Appearance (physical state, color):</b>	Clear, colorless liquid	<b>Explosion limit lower:</b>	1.8 %(V)
		<b>Explosion limit upper:</b>	48 %(V)
<b>Odor:</b>	Characteristic, sweet, pungent	<b>Vapor pressure at 20°C:</b>	563 hPa (422 mmHg) at 20 °C (68 °F)
<b>Odor threshold:</b>	Not determined	<b>Vapor density:</b>	2.56 - (Air = 1.0)
<b>pH-value:</b>	Not determined	<b>Relative density:</b>	Not determined
<b>Melting/Freezing point:</b>	-116 °C (-177 °F)	<b>Solubilities:</b>	Water solubility: 65 g/l at 20 °C (68 °F)
<b>Boiling point/Boiling range:</b>	34.6 °C (94.3 °F) at 1,013 hPa (760 mmHg)	<b>Partition coefficient (n-octanol/water):</b>	Not determined
<b>Flash point (closed cup):</b>	-40 °C (-40 °F) - closed cup	<b>Auto/Self-ignition temperature:</b>	180 °C (356 °F) - Auto-flammability
<b>Evaporation rate:</b>	Not determined	<b>Decomposition temperature:</b>	Not determined



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### Ethyl Ether, Anhydrous, ACS

<b>Flammability (solid, gaseous):</b>	Extremely flammable	<b>Viscosity:</b>	a. Kinematic: Not determined b. Dynamic: Not determined
<b>Density at 20°C:</b>	0.71 g/cm <sup>3</sup> at 20 °C (68 °F)		

#### SECTION 10: Stability and reactivity

**Reactivity:**

Nonreactive under normal conditions.

**Chemical stability:**

Stable under normal conditions.

**Possible hazardous reactions:**

None under normal processing. Vapours may form explosive mixture with air.

**Conditions to avoid:**

Incompatible materials. Ignition sources. Direct Sunlight. Excess heat.

**Incompatible materials:**

Strong oxidizing agents. Strong acids.

**Hazardous decomposition products:**

Carbon oxides.

#### SECTION 11: Toxicological information

**Acute Toxicity:**

**Dermal:**

60-29-7 LD50 - rat - 1,215 mg/kg

**Inhalation:**

60-29-7 LC50 - mouse - 30 min - 31000 ppm Remarks: Behavioral; Convulsions or effect on seizure threshold.

**Chronic Toxicity:** No additional information.

**Skin corrosion/irritation:** No additional information.

**Serious eye damage/irritation:**

60-29-7 Rabbit - Eye irritation - 24 h - Draize Test

**Respiratory or skin sensitization:** No additional information.

**Carcinogenicity:** See section 15.

**Germ cell mutagenicity:** No additional information.

**Reproductive Toxicity:** No additional information.

**STOT-single and repeated exposure:** No additional information.

**Additional toxicological information:** No additional information.

#### SECTION 12: Ecological information

**Ecotoxicity:**

96 Hr LC50 Pimephales promelas: 2560 mg/L [flow-through]; 96 Hr LC50 Lepomis macrochirus: >10000 mg/L [static]

**Persistence and degradability:**

Readily biodegradable.

**Bioaccumulative potential:**



**Ethyl Ether, Anhydrous, ACS**

Not Bioaccumulative.

**Mobility in soil:**

Aqueous solution has high mobility in soil.

**Other adverse effects:**

None identified.

**SECTION 13: Disposal considerations**

**Waste disposal recommendations:**

Contact a licensed professional waste disposal service to dispose of this material. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Dispose of empty containers as unused product. Product or containers must not be disposed with household garbage. It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11). Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations. Ensure complete and accurate classification.

**SECTION 14: Transport information**

**US DOT**

**UN Number:**

ADR, ADN, DOT, IMDG, IATA 1155

**Limited Quantity Exception:**

None

**Bulk:**

**RQ (if applicable):** None

**Proper shipping Name:** Diethyl ether.

**Hazard Class:** 3

**Packing Group:** I.

**Marine Pollutant (if applicable):** No additional information.

**Comments:** None

**Non Bulk:**

**RQ (if applicable):** None

**Proper shipping Name:** Diethyl ether.

**Hazard Class:** 3

**Packing Group:** I.

**Marine Pollutant (if applicable):** No additional information.

**Comments:** None



**SECTION 15: Regulatory information**

**United States (USA)**

**SARA Section 311/312 (Specific toxic chemical listings):**

Acute, Chronic, Fire

**SARA Section 313 (Specific toxic chemical listings):**

None of the ingredients are listed.

**RCRA (hazardous waste code):**

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### Ethyl Ether, Anhydrous, ACS

60-29-7 Diethyl ether; RCRA Waste number U117 (Ignitable waste).

#### **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

#### **CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):**

60-29-7 Ethyl Ether 100 lbs.

#### **Proposition 65 (California):**

##### **Chemicals known to cause cancer:**

None of the ingredients are listed.

##### **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients are listed.

##### **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients are listed.

##### **Chemicals known to cause developmental toxicity:**

None of the ingredients are listed.

#### **Canada**

##### **Canadian Domestic Substances List (DSL):**

All ingredients are listed.

### **SECTION 16: Other information**

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations. Note. The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material.

**NFPA:** 2-4-0

**HMIS:** 2-4-0

**GHS Full Text Phrases:** None

#### **Abbreviations and Acronyms:**

IMDG International Maritime Code for Dangerous Goods.  
IATA International Air Transport Association.  
GHS Globally Harmonized System of Classification and Labelling of Chemicals.  
ACGIH American Conference of Governmental Industrial Hygienists.  
CAS Chemical Abstracts Service (division of the American Chemical Society).  
NFPA National Fire Protection Association (USA).  
HMIS Hazardous Materials Identification System (USA).  
WHMIS Workplace Hazardous Materials Information System (Canada).  
DNEL Derived No-Effect Level (REACH).  
PNEC Predicted No-Effect Concentration (REACH).  
CFR Code of Federal Regulations (USA).



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### Ethyl Ether, Anhydrous, ACS

SARA Superfund Amendments and Reauthorization Act (USA).  
RCRA Resource Conservation and Recovery Act (USA).  
TSCA Toxic Substances Control Act (USA).  
NPRI National Pollutant Release Inventory (Canada).  
DOT US Department of Transportation.

**Effective date:** 10.24.2014

**Last updated:** 06.17.2015

**HYDROGEN PEROXIDE 50% (ALL GRADES)****1. PRODUCT AND COMPANY IDENTIFICATION****Company**

Arkema Canada Inc.  
1100 Burloak Drive, Suite 107  
Burlington, Ontario, L7L 6B2

**Oxygenated and Derivatives**

Customer Service Telephone Number: (800) 567-5726  
(Monday through Friday, 8:30 AM to 4:30 PM EST)

**Emergency Information**

Transportation: CANUTEC: (613) 996-6666  
(24 hrs., 7 days a week)  
Medical: Rocky Mountain Poison Center: (303) 623-5716  
(24 hrs., 7 days a week)

**Product Information**

Product name: HYDROGEN PEROXIDE 50% (ALL GRADES)  
Synonyms: H<sub>2</sub>O<sub>2</sub> 50%  
Molecular formula: H<sub>2</sub>O<sub>2</sub>  
Chemical family: peroxides  
Molecular weight: 34.01 g/mol  
Product use: Bleaching agent, Oxidizing agent, Cosmetics, Water treatment

**2. HAZARDS IDENTIFICATION****Emergency Overview**

**DANGER!**  
STRONG OXIDIZER.  
CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE OR EXPLOSIVE DECOMPOSITION.  
CAUSES EYE AND SKIN BURNS.  
MAY CAUSE BLINDNESS.  
HARMFUL IF INHALED OR SWALLOWED.  
MAY CAUSE RESPIRATORY TRACT IRRITATION.

**Potential Health Effects**

**Primary routes of exposure:**  
Inhalation and skin contact.

**Signs and symptoms of acute exposure:**  
Corrosive to skin and eyes. May cause irritation of respiratory tract. Effects due to ingestion may include: gastrointestinal symptoms ulceration, burns, accumulation of fluid in the lungs which may be delayed for several hours.

**Skin:**  
Slightly toxic. Corrosive. (based on animal studies)

**Inhalation:**  
Toxic Irritating. (based on animal studies)

**HYDROGEN PEROXIDE 50% (ALL GRADES)****Eyes:**

Corrosive. (based on animal studies)

**Ingestion:**

No more than moderately toxic. (based on animal studies)

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Chemical Name	CAS-No.	Wt/Wt	WHMIS Controlled
Hydrogen peroxide (H <sub>2</sub> O <sub>2</sub> )	7722-84-1	>= 30 - < 60 %	Y
Water	7732-18-5	>= 30 - < 60 %	N

The substance(s) marked with a "Y" in the above WHMIS Controlled column are those identified as hazardous chemicals under the Controlled Products Regulation.

**4. FIRST AID MEASURES****Inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention. Call a Poison Control Center.

**Skin:**

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Destroy contaminated shoes.

**Eyes:**

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.

**Ingestion:**

If swallowed, DO NOT induce vomiting. Get medical attention immediately. Call a Poison Control Center. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.

**Notes to physician:**

Exposure to material may cause delayed lung injury resulting in pulmonary edema and pneumonitis. Exposed individuals should be monitored for 72 hours after exposure for the onset of delayed respiratory symptoms.

**5. FIRE-FIGHTING MEASURES**

Flash point:	None.
Auto-ignition temperature:	not applicable
Lower flammable limit (LFL):	not applicable
Upper flammable limit (UFL):	not applicable

**Extinguishing media (suitable):**

water spray, water fog





## HYDROGEN PEROXIDE 50% (ALL GRADES)

### Protective equipment:

Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand / NIOSH approved or equivalent).

### Further firefighting advice:

Fire fighting equipment should be thoroughly decontaminated after use.

### Hazardous combustion products:

#### Oxidizing Material

Solutions above 65% are especially hazardous as they do not contain enough water to remove the heat of decomposition by evaporation.

Explosive when mixed with combustible material.

Avoid breathing fumes from fire exposed material.

### Explosion Data:

Sensitivity to Mechanical Impact: No

Sensitivity to Static Discharge: No

## 6. ACCIDENTAL RELEASE MEASURES

### In case of spill or leak:

Prevent further leakage or spillage if you can do so without risk. Evacuate area of all unnecessary personnel. Ventilate the area. Eliminate all ignition sources. Avoid generation of vapors. Avoid contact with cellulose, paper, sawdust or similar substances. Risk of self-ignition or promotion of fires. Combustible materials exposed to hydrogen peroxide should be rinsed immediately with large amounts of water to ensure that all the hydrogen peroxide is removed. Contain and collect spillage with non-combustible absorbent material such as clean sand, earth, diatomaceous earth or non-acidic clay and place into suitable properly labeled containers for prompt disposal. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

## 7. HANDLING AND STORAGE

### Handling

**General information on handling:** Do not get in eyes, on skin, or on clothing.

Do not taste or swallow.

Avoid breathing vapor or mist.

Wash thoroughly after handling.

Use only with adequate ventilation.

Avoid contamination.

Keep from contact with clothing and other combustible materials.

Store in tightly closed container.

Emptied container retains vapor and product residue.

Observe all labeled safeguards until container is cleaned, reconditioned or destroyed.

DO NOT CUT, DRILL, GRIND, OR WELD ON OR NEAR THIS CONTAINER.

### Storage

#### **General information on storage conditions:**

Store away from combustibles and incompatible materials. Store in cool, dry, well ventilated area away from sources of ignition such as flame, sparks and static electricity. Refer to National Fire Protection Association (NFPA)

**HYDROGEN PEROXIDE 50% (ALL GRADES)**

430, Code for the Storage of Solid and Liquid Oxidizers.

**Storage incompatibility – General:**

Store separate from acids, alkalies, reducing agents, and combustibles. Store separate from: Metallic oxides

Organic materials

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Airborne Exposure Guidelines:****Hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) (7722-84-1)**

US. ACGIH Threshold Limit Values

Time Weighted Average (TWA): 1 ppm

**Engineering controls:**

Investigate engineering techniques to reduce exposures below airborne exposure limits or to otherwise reduce exposures. Provide ventilation if necessary to minimize exposures or to control exposure levels to below airborne exposure limits (if applicable see above). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

**Respiratory protection:**

Avoid breathing vapor or mist. Where airborne exposure is likely or airborne exposure limits are exceeded (if applicable, see above), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical goggles. Consult respirator manufacturer to determine appropriate type equipment for a given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where exposure limits may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

**Skin protection:**

Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact.

When handling this material, gloves of the following type(s) should be worn:

Neoprene

Polyvinylchloride

Impervious butyl rubber gloves

Wear a face shield, chemical goggles and chemical resistant clothing such as an approved splash protective suit made of SBR Rubber, PVC, Gore-Tex or a HAZMAT Splash Protective Suit (Level A, B, or C) when splashing may occur (such as connecting/disconnecting, mechanical first break). For foot protection, wear boots made of NBR, PVC, polyurethane, or neoprene. Overboots made of Latex or PVC, as well as firefighter boots or specialized HAZMAT boots are also permitted. DO NOT wear any form of boot or overboots made of nylon or nylon blends. DO NOT use cotton, wool or leather, as these materials react RAPIDLY with higher concentrations of hydrogen peroxide. Rinse immediately if skin is contaminated. Remove contaminated clothing and shoes immediately. Thoroughly rinse the outside of gloves and protective clothing with water prior to removal. Completely submerge hydrogen peroxide contaminated clothing or other materials in water prior to drying. Residual hydrogen peroxide, if allowed to dry on materials such as paper, fabrics, cotton, leather, wood or other combustibles can cause the material to ignite and result in a fire. Clean protective equipment before

**HYDROGEN PEROXIDE 50% (ALL GRADES)**

reuse. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

**Eye protection:**

Where there is potential for eye contact, wear a face shield, chemical goggles, and have eye flushing equipment immediately available.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

Color:	colourless
Physical state:	liquid
Odor:	pungent
Odour Threshold:	None.
pH:	no data available
Density:	1.196 g/cm <sup>3</sup> 68 °F (20 °C)
Vapor pressure:	18 mmHg 68 °F (20 °C)
Relative vapor density:	1.0
Vapor density:	not determined
Boiling point/boiling range:	114 °C
Freezing point:	-62 °F (-52 °C)
Evaporation rate:	no data available
Solubility in water:	completely soluble
% Volatiles:	100 %
Molecular weight:	34.01 g/mol
Henry's constant:	(Concentration: 70%) 10.0E-03

**10. STABILITY AND REACTIVITY****Stability:**

This material is chemically stable under normal and anticipated storage, handling and processing conditions.

**Hazardous reactions:****Materials to avoid:**

Metals Organic materials Reducing agents Metallic oxides Dusts Combustible materials (e.g., wood, sawdust) Alkaline materials

**Conditions / hazards to avoid:**

Material decomposes with the potential to produce a rupture of unvented closed containers.

**Hazardous decomposition products:**

This material decomposes if contaminated, causing fire and possible explosions. Oxygen can be liberated at

**HYDROGEN PEROXIDE 50% (ALL GRADES)**

temperatures above ambient.

**11. TOXICOLOGICAL INFORMATION**

Data on this material and/or its components are summarized below.

**Data for HYDROGEN PEROXIDE 50% (ALL GRADES)****Acute toxicity****Oral:**

No more than moderately toxic. (rat) LD50 = 225-1200 mg/kg (50%) .

Moderately toxic. (rat) LD50 = 75 mg/kg (70%) .

**Dermal:**

Practically nontoxic. (rat) LD50 >6500 mg/kg (70%) .

**Inhalation:**

No deaths observed. (rat) 4 h LC0 > 0.17 mg/l. (100 %)

Toxic. (mouse) 1 h Acute toxicity estimate between 2 - 3 mg/l. (100 %) signs: lung effects, irritation

Toxic. (rat) 4 h LC50 2 mg/l. (100 %)

**Skin Irritation:**

Corrosive. (rabbit) (50 %)

Corrosive. (rabbit) (70 %)

**Eye Irritation:**

Corrosive. (rabbit) (70 %)

**Repeated dose toxicity**

Repeated drinking water administration to rat and mouse / affected organ(s): GI tract / signs: irritation

Repeated inhalation administration to rat and mouse / affected organ(s): nose / signs: irritation

Repeated inhalation administration to dog / affected organ(s): upper respiratory tract, lung / signs: irritation, emphysema

Chronic oral administration to laboratory animal / affected organ(s): stomach / signs: ulceration

**Carcinogenicity**

Chronic drinking water administration to rat and mouse / affected organ(s): GI tract / Increased incidence of tumors was reported.

Classified by the International Agency for Research on Cancer as: Group 3: Unclassifiable as to carcinogenicity in humans.

**Genotoxicity****Assessment in Vitro:**

Genetic changes were observed in laboratory tests using: bacteria, animal cells

**Assessment in Vivo:**

No genetic changes were observed in laboratory tests using: animals



**HYDROGEN PEROXIDE 50% (ALL GRADES)****Human experience****Inhalation:**

Throat: irritation. (based on reports of occupational exposure to workers)

**Skin contact:**

Skin: bleaching of hair. (based on reports of occupational exposure to workers)

**Eye contact:**

Eye: irritating. (based on reports of occupational exposure to workers)

**Ingestion:**

GI tract: bloating, ulceration, burns. (accidental exposure to concentrated solutions)

Lung: accumulation of fluid in the lungs, death.

**12. ECOLOGICAL INFORMATION****Chemical Fate and Pathway**

No data are available.

**Ecotoxicology**

Data on this material and/or its components are summarized below.

**Data for HYDROGEN PEROXIDE 50% (ALL GRADES)****Aquatic toxicity data:**

Slightly toxic. Fish 96 h LC50 between 10 - 37 mg/l

**Aquatic invertebrates:**

Moderately toxic. Daphnia magna (Water flea) EC50 = 7.7 mg/l

Moderately toxic. Daphnia pulex (Water flea) EC50 = 2.4 mg/l

**Algae:**

Highly toxic. EC50 = 0.85 mg/l

**Microorganisms:**

Slightly toxic. Bacteria EC50 = 30 mg/l

**13. DISPOSAL CONSIDERATIONS****Waste disposal:**

Dilution with water is the preferred method of disposal. Dispose of in accordance with federal, state and local regulations. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits. Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

**14. TRANSPORT INFORMATION****Canadian Transportation of Dangerous Good (TDG)**

UN number	:	2014
Description of the goods	:	HYDROGEN PEROXIDE, AQUEOUS SOLUTION
Class	:	5.1



**HYDROGEN PEROXIDE 50% (ALL GRADES)**

Subsidiary hazard class : (8)  
Packaging group : II  
Labels : 5.1 (8)

**International Maritime Dangerous Goods Code (IMDG)**

UN Number : 2014  
Proper shipping name : HYDROGEN PEROXIDE, AQUEOUS SOLUTION  
Class : 5.1  
Subsidiary hazard class : (8)  
Packaging group : II  
Marine pollutant : no

**15. REGULATORY INFORMATION****Chemical Inventory Status**

EU. EINECS	EINECS	Conforms to
US. Toxic Substances Control Act	TSCA	The components of this product are all on the TSCA Inventory.
Australia. Industrial Chemical (Notification and Assessment) Act	AICS	Conforms to
Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL). (Can. Gaz. Part II, Vol. 133)	DSL	All components of this product are on the Canadian DSL list.
Japan. Kashin-Hou Law List	ENCS (JP)	Does not conform
Korea. Toxic Chemical Control Law (TCCL) List	KECI (KR)	Conforms to
Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act	PICCS (PH)	Does not conform
China. Inventory of Existing Chemical Substances	IECSC (CN)	Does not conform
New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand	NZIOC	Conforms to

**Canada - Federal Regulations****Workplace Hazardous Materials Information System (WHMIS)**

C: Oxidizing material  
D1B: Toxic material causing immediate and serious toxic effects  
E: Corrosive material  
F: Dangerously reactive material

**Ingredient Disclosure List (IDL)**

WHMIS Ingredient Disclosure List IDL: No component is listed on the WHMIS ingredients disclosure list.

**HYDROGEN PEROXIDE 50% (ALL GRADES)****WHMIS Regulated Carcinogens (IARC, ACGIH Listed):****IARC:**

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**ACGIH:**Chemical NameHydrogen peroxide (H<sub>2</sub>O<sub>2</sub>)CAS-No.

7722-84-1

Rating

Group A3 (Confirmed animal carcinogen with unknown relevance to humans.)

**National Pollution Release Inventory (NPRI)**

Canadian National Pollutant Release Inventory (NPRI): No component is listed on NPRI.

**16. OTHER INFORMATION****Miscellaneous:****Other information:**

This MSDS covers the following grades of 50% H<sub>2</sub>O<sub>2</sub>: Albone; Peroxal; Valsterane; A; Alb, BIO; CG; CG-HP; CGHP; CLG; DS; FG; M; MS.

**Latest Revision(s):**

Revised Section(s): Initial entry  
Reference number: 000000033382  
Date of Revision: 10/21/2010

Date Printed: 10/21/2010

PREPARED BY: TECHNICAL DEPARTMENT  
PHONE NUMBER OF PREPARER: (800) 567-5726  
PREPARATION DATE: 10/21/2010

THIS PRODUCT HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CPR AND THE MSDS CONTAINS ALL THE INFORMATION REQUIRED BY THE CPR.

THE INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE DEPENDABLE AND IS ACCURATE TO THE BEST OF OUR KNOWLEDGE. HOWEVER, SINCE DATA, SAFETY STANDARDS, AND GOVERNMENT REGULATIONS ARE SUBJECT TO CHANGE AND THE CONDITIONS OF HANDLING AND USE, OR MISUSE ARE BEYOND OUR CONTROL, ARKEMA CANADA INC. MAKES NO WARRANTY EXPRESSED OR IMPLIED, WITH RESPECT TO COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. USER SHOULD SATISFY HIMSELF THAT HE HAS ALL CURRENT DATA RELEVANT TO HIS PARTICULAR USE. THE INFORMATION PROVIDED HEREIN RELATES ONLY TO THE SPECIFIC PRODUCT DESIGNATED AND MAY NOT BE VALID WHERE SUCH PRODUCT IS USED IN COMBINATION WITH ANY OTHER MATERIALS OR IN ANY PROCESS.



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acc. to OSHA HCS

Printing date 08/23/2019

Edition n° 10

Reviewed on 08/23/2019

## 1 Identification

\* **1.1 Product identifier**

\* Trade name: **IDROSOLVAN RD 7**

\* ITEM Code: 1000508004

\* **1.2 Relevant identified uses of the substance or mixture and uses advised against**  
No further relevant information available.

\* **1.3 Details of the supplier of the safety data sheet**

\* Manufacturer/Supplier:

BOZZETTO, Inc  
214 East JJ Drive, Suite F  
Greensboro, NC 27406

Phone: 336-333-3526 - Toll Free: 866-888-8398

Fax: 336-333-7964

productsafety@bozzetto.it

\* **1.4 Emergency telephone number:** Phone No : 1-800-535-5053

## 2 Hazard(s) identification

\* **2.1 Classification of the substance or mixture**

\* Classification according to Regulation (EC) No 1272/2008



GHS05 Corrosion

Eye Dam. 1 H318 Causes serious eye damage.

\* **2.2 Label elements**

\* Labelling according to Regulation (EC) No 1272/2008 The product is classified and labeled according to the CLP regulation.

\* Hazard pictograms



GHS05

\* Signal word Danger

\* Hazard-determining components of labeling:

ISO C13 ALCOHOL (5-EO)

Ethoxylated alcohol

\* Hazard statements

H318 Causes serious eye damage.

\* Precautionary statements

P273 Avoid release to the environment.

P280 Wear eye protection / face protection.

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P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a poison center/doctor.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**\* Classification system:**

**\* NFPA ratings (scale 0 - 4)**



**\* HMIS-ratings (scale 0 - 4)**

HEALTH	3	Health = 3
FIRE	1	Fire = 1
REACTIVITY	0	Reactivity = 0

**\* Results of PBT and vPvB assessment**

\* PBT: Not applicable.

\* vPvB: Not applicable.

### 3 Composition/information on ingredients

**\* 3.2 Chemical characterization: Mixtures**

\* Description: Mixture of the substances listed below with non hazardous additions.

**\* Dangerous components:**

9043-30-5	ISO C13 ALCOHOL (5-EO)	50-75%
112-34-5	Butyldiglycol	10-25%

### 4 First-aid measures

**\* 4.1 Description of first aid measures**

**\* General information:**

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

\* After inhalation: Supply fresh air; consult doctor in case of complaints.

**\* After skin contact:**

If skin irritation continues, consult a doctor.

Immediately wash with water and soap and rinse thoroughly.

\* After eye contact: Rinse opened eye for several minutes under running water. Then consult a doctor.

\* After swallowing: Drink copious amounts of water and provide fresh air. Immediately call a doctor.

\* 4.2 Most important symptoms and effects, both acute and delayed No further relevant information available.

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\* **4.3 Indication of any immediate medical attention and special treatment needed** No further relevant information available.

## 5 Fire-fighting measures

\* **5.1 Extinguishing media**

\* **Suitable extinguishing agents:**

CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

\* **5.2 Special hazards arising from the substance or mixture**

In certain fire conditions, traces of other toxic gases cannot be excluded, e.g.:

Carbon monoxide (CO)

\* **5.3 Advice for firefighters**

\* **Protective equipment:**

Mouth respiratory protective device.

Do not inhale explosion gases or combustion gases.

Wear fully protective suit.

\* **Additional information**

Cool endangered receptacles with water spray.

Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

## 6 Accidental release measures

\* **6.1 Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Keep away from ignition sources

Use respiratory protective device against the effects of fumes/dust/aerosol.

Refer to point 8

\* **6.2 Environmental precautions:**

Do not allow product to reach sewage system or any water course.

In case of seepage into the ground inform responsible authorities.

Dilute with plenty of water.

Do not allow undiluted product to enter sewers/surface or ground water

\* **6.3 Methods and material for containment and cleaning up:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

\* **6.4 Reference to other sections**

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

\* **Protective Action Criteria for Chemicals**

\* **PAC-1:**

112-34-5 Butyldiglycol

30 ppm

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**\* PAC-2:**

112-34-5 Butyldiglycol	33 ppm
------------------------	--------

**\* PAC-3:**

112-34-5 Butyldiglycol	200 ppm
------------------------	---------

## 7 Handling and storage

**\* 7.1 Precautions for safe handling**

- Keep receptacles tightly sealed.
- Store in cool, dry place in tightly closed receptacles.
- Keep away from heat and direct sunlight.
- Ensure good ventilation/exhaustion at the workplace.
- Open and handle receptacle with care.
- Prevent formation of aerosols.
- Ensure that suitable extractors are available on processing machines
- Use only in well ventilated areas.
- \* Information about protection against explosions and fires:** No special measures required.

**\* 7.2 Conditions for safe storage, including any incompatibilities**

- \* Storage:**
- \* Requirements to be met by storerooms and receptacles:** No special requirements.
- \* Information about storage in one common storage facility:** Not required.
- \* Further information about storage conditions:** None.
- \* Storage class:**
- \* Class according to regulation on flammable liquids:** Not applicable
- \* 7.3 Specific end use(s)** No further relevant information available.

## 8 Exposure controls/personal protection

**\* 8.1 Control parameters**

**\* Components with limit values that require monitoring at the workplace:**

The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.  
At this time, the remaining constituent has no known exposure limits.

112-34-5 Butyldiglycol	
TLV (USA)	Long-term value: 67.5* mg/m <sup>3</sup> , 10* ppm *Inhalable fraction and vapor
WEL (Great Britain)	Short-term value: 101.2 mg/m <sup>3</sup> , 15 ppm Long-term value: 67.5 mg/m <sup>3</sup> , 10 ppm
LEP (Spain)	Short-term value: 101.2 mg/m <sup>3</sup> , 15 ppm Long-term value: 67.5 mg/m <sup>3</sup> , 10 ppm VLI, r

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**\* 8.2 Exposure controls**

**\* Personal protective equipment:**

**\* General protective and hygienic measures:**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs and beverages.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Do not inhale gases / fumes / aerosols.

Avoid contact with the eyes.

Avoid contact with the eyes and skin.

Do not eat or drink while working.

**\* Breathing equipment:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

**\* Protection of hands:**

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation (EN 374).

**\* Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

**\* Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

**\* Eye protection:**



Tightly sealed goggles

## 9 Physical and chemical properties

**\* 9.1 Information on basic physical and chemical properties**

**\* General information**

**\* Appearance:**

Form: Fluid

Color: Light yellow

\* Odor: Characteristic

\* Odor threshold: Not determined.

\* pH-value at 20 °C (68 °F): 7

**\* Change in condition**

Melting point/Melting range: ~0 °C (~32 °F) (OECD 102)

Boiling point/Boiling range: >100 °C (>212 °F) (OECD 103)

\* Flash point: >100 °C (>212 °F) (DIN 51758)

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* <b>Flammability (solid, gaseous):</b>	Not applicable.
* <b>Ignition temperature:</b>	>200 °C (>392 °F) (DIN 51794)
* <b>Decomposition temperature:</b>	Not determined.
* <b>Auto Igniting:</b>	Product is not selfigniting.
* <b>Danger of explosion:</b>	Product does not present an explosion hazard.
* <b>Explosion limits:</b>	
Lower:	0.9 Vol %
Upper:	5.9 Vol %
* <b>Oxidizing properties</b>	not available
* <b>Vapor pressure at 20 °C (68 °F):</b>	23 hPa (17.3 mm Hg)
* <b>Density at 20 °C (68 °F):</b>	0.99 g/cm³ (8.262 lbs/gal) (OECD 109)
* <b>Relative density</b>	Not determined.
* <b>Vapor density</b>	Not determined.
* <b>Evaporation rate</b>	Not determined.
* <b>Solubility in / Miscibility with</b>	
Water:	Fully miscible.
* <b>Partition coefficient (n-octanol/water):</b>	Not determined.
* <b>Viscosity:</b>	
Dynamic at 20 °C (68 °F):	55 mPas (OECD 111)
Kinematic:	Not determined.
* <b>Solvent content:</b>	
Organic solvents:	13.0 %
VOC content:	13.00 %
	171.0 g/l / 1.43 lb/gal
* <b>9.2 Other Information</b>	No further relevant information available.

## 10 Stability and reactivity

- \* **10.1 Reactivity** No further relevant information available.
- \* **10.2 Chemical stability**
- \* **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- \* **10.3 Possibility of hazardous reactions** No dangerous reactions known.
- \* **10.4 Conditions to avoid** No further relevant information available.
- \* **10.5 Incompatible materials:** No further relevant information available.
- \* **10.6 Hazardous decomposition products:**  
For combustion during a fire:  
Carbon monoxide and carbon dioxide

## 11 Toxicological information

- \* **11.1 Information on toxicological effects**
- \* **Acute toxicity:** Based on available data, the classification criteria are not met.

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**\* LD/LC50 values that are relevant for classification:**

Oral	LD-50 (OECD 401)	>2,000 mg/kg (rat)
------	------------------	--------------------

**\* Primary Irritant effect:**

**\* on the skin (Rabbit OECD 404):** Based on available data, the classification criteria are not met.

**\* on the eye (Rabbit OECD 405):**

Causes serious eye damage.

**\* Sensitization (Guinea pig OECD 406):** Based on available data, the classification criteria are not met.

**\* Additional toxicological information:**

**\* Carcinogenic categories**

**\* IARC (International Agency for Research on Cancer)**

None of the ingredients are listed.

**\* NTP (National Toxicology Program)**

None of the ingredients are listed.

**\* OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients are listed.

## 12 Ecological information

**\* 12.1 Toxicity**

**\* Aquatic toxicity:**

Oral	LC-50/96h (OECD 203)	>200 mg/l (fish)
	EC-50/48 h	>200 mg/l (daphnia)

**\* 12.2 Persistence and degradability** > 80 % OECD 301 E

**\* COD (Std Method 5220 D):** 1700 mg/g

**\* BOD-5 (Std. Method 5210 B):** 350 mg/g

**\* MBAS:** 0 mg/g

**\* BIAS** 620 mg/g

**\* 12.3 Bioaccumulative potential** No further relevant information available.

**\* 12.4 Mobility in soil** No further relevant information available.

**\* 12.5 Results of PBT and vPvB assessment**

**\* PBT:** Not applicable.

**\* vPvB:** Not applicable.

**\* 12.6 Other adverse effects** No further relevant information available.

## 13 Disposal considerations

**\* 13.1 Waste treatment methods**

**\* Recommendation:**

Must not be disposed of together with household garbage. Do not allow UNDILUTED product to reach sewage system.

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- \* Waste disposal key: 07 07 99
- \* Uncleaned packagings:
- \* Recommendation: Disposal must be made according to official regulations.
- \* Recommended cleansing agent: Water, if necessary with cleansing agents.

## 14 Transport information

- |  |                 |
|--|-----------------|
| * 14.1 UN-Number   |                 |
| * DOT, ADR, ADN, IMDG, IATA  | Not applicable  |
| * 14.2 UN proper shipping name   |                 |
| * DOT, ADR, ADN, IMDG, IATA  | Not applicable  |
| * 14.3 Transport hazard class(es)  |                 |
| * DOT, ADR, ADN, IMDG, IATA  |                 |
| * Class  | Not applicable  |
| * 14.4 Packing group   |                 |
| * DOT, ADR, IMDG, IATA   | Not applicable  |
| * 14.5 Environmental hazards:  | Not applicable. |
| * 14.6 Special precautions for user  | Not applicable. |
| * 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code | Not applicable. |
| * UN "Model Regulation":   | Not applicable  |

## 15 Regulatory information

- \* 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

\* Sara

\* Section 302 (extremely hazardous substances):

None of the ingredients are listed.

\* Section 313 (Specific toxic chemical listings):

112-34-5 Butyldiglycol

\* TSCA (Toxic Substances Control Act):

9043-30-5 ISO C13 ALCOHOL (5-EO)

ACTIVE

\* Hazardous Air Pollutants

None of the ingredients are listed.

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**\* Proposition 65**

**\* Chemicals known to cause cancer:**

None of the ingredients are listed.

**\* Chemicals known to cause reproductive toxicity for females:**

None of the ingredients are listed.

**\* Chemicals known to cause reproductive toxicity for males:**

None of the ingredients are listed.

**\* Chemicals known to cause developmental toxicity:**

None of the ingredients are listed.

**\* National regulations:**

**\* Classification according to VbF:** Not applicable

**\* Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.

## 16 Other information

The Information contained herein is based on the present state of our knowledge and in compliance with 91/155/EC Directive (subsequent modifications and integrations) and 1907/2006/EC Regulation. However, we make no guarantees concerning specific product features and shall not establish a legally valid contractual relationship.

It is prohibited to use the product for any purposes different than those specified in the technical sheet and without receiving written instructions. We take no responsibility for unauthorized use.

It is always the responsibility of the user to take all necessary steps in order to assure compliance with all current local, state, and Federal regulations as for hygiene, safety and environment protection.

The information in this SDS is meant only as a description of the safety requirements of our product. It is not to be considered as a guarantee of the product properties.

**\* Abbreviations and acronyms:**

ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

VbF: Verordnung über brennbare Flüssigkeiten, Österreich (Ordinance on the storage of combustible liquids, Austria)

VOC: Volatile Organic Compounds (USA, EU)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

vPvB: very Persistent and very Bioaccumulative

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

Eye Dam. 1: Serious eye damage/eye irritation – Category 1

**\* Sources**

NIOSH - Registry of toxic effects of chemical substances (1993)

CESIO - Classification and labelling of anionic, nonionic surfactants(01/2000)

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SAX'S Dangerous Properties of Industrial Materials (1993)

ACGIH "2001 TLV"

TLV "2000/39/CE"

R.D.Swisher - Surfactants biodegradation

ECDIN DB

KBwS list

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US

## SAFETY DATA SHEET

May be used to comply with OSHA's Hazard Communication Standard, 29CFR 1910.1200. Standard must be consulted for specific regulations.

## JARACE SA-N

Quick Identifier

Common Name (Used on Label and List)

---

### SECTION I - IDENTIFICATION

#### Jarace SA-N

Manufacturer's Name	-	JARCHEM INDUSTRIES, INC.	
Address	-	414 Wilson Avenue	
		Newark, NJ 07105	
Emergency Telephone #	-	(973) 344-0600	Secondary Telephone No.: CHEMTREC
Other Information Calls	-	(973) 344-0600	(800) 424-9300
			24 Hours a Day
Date Prepared	-	7/24/2014	
Date Revised	-	4/7/2017	

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### SECTION II - HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

Signal Word: WARNING

#### GHS Classification:

Eye Corrosion/Irritation - Category 2B Causes eye irritation

Skin Corrosion/Irritation - Category 3

Wash hands thoroughly after handling. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

#### HMIS HAZARD RATINGS

#### Pictograms

HEALTH	1
FLAMMABILITY	0
REACTIVITY	0

SPILL PRECAUTIONS: Store in closed containers.

EYES: Causes eye irritation.

SKIN: Causes mild skin irritation.

INHALATION: May be harmful if inhaled.

INGESTION: May be harmful if swallowed.

(See section for Toxicological Information)

---

### SECTION III - COMPOSITION / INFORMATION ON INGREDIENT

PRODUCT NAME: Jarace SA-N

SYNONYMS: Acetic Acid, Sodium Salt, Sodium Ethanoate

CHEMICAL NAME: Sodium Acetate FCC Grade Anhydrous CAS#: 127-09-3 EC#: 204-823-8

Ingredients	CAS#	% by Weight
Sodium Acetate Anhydrous	127-09-3	100

See sections on Exposure Guidelines and Regulatory Classifications.

---

### SECTION IV - FIRST-AID MEASURES



## **SAFETY DATA SHEET**

May be used to comply with OSHA's Hazard Communication Standard, 29CFR 1910.1200. Standard must be consulted for specific regulations.

## **JARACE SA-N**

Quick Identifier

Common Name (Used on Label and List)

**EYES:** Flush eyes with water for at least 15 minutes. Seek medical attention.

**SKIN:** Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops. Cold water may be used.

**INHALATION:** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

**INGESTION:** Do not induce vomiting. Give several glasses of water to dilute; never give anything by mouth to an unconscious person. Loosen tight clothing. Seek medical attention.

### **SECTION V - FIRE-FIGHTING MEASURES**

#### **NFPA Rating**

#### **FLAMMABLE PROPERTIES:**

HEALTH 1

FLASH POINT: OPEN CUP N/A

CLOSED CUP > 250 °C (>482 °F)

FLAMMABILITY 0

REACTIVITY 0

AUTO IGNITION TEMPERATURE: 600 °C (1,112 °F)

FLAMMABLE LIMITS IN AIR % BY VOLUME: LOWER N/A

UPPER N/A

**FIRE AND EXPLOSION HAZARD:** Not flammable or combustible under normal conditions, may be combustible at extremely high temperatures.

#### **EXTINGUISHING MEDIA AND INSTRUCTIONS:**

Water spray, dry chemical, alcohol foam or carbon dioxide.

**SPECIAL REMARKS:** In the event of a fire, wear full protective clothing and NIOSH approved self-contained breathing apparatus with full facepiece operated in positive pressure mode.

### **SECTION VI - ACCIDENTAL RELEASE MEASURES**

#### **STEPS TO BE TAKEN IN CASE OF SPILL OR LEAK:**

**SMALL SPILLS:** Remove all sources of ignition. Ventilate area. Sweep or vacuum up material taking care to not disperse dust in the air. Use non-sparking tools and equipment. Wet area as needed to reduce dust.

**LARGE SPILLS:** Remove all sources of ignition. Ventilate area. Sweep or vacuum up material taking care to not disperse dust in the air. Use non-sparking tools and equipment. Wet area as needed to reduce dust.

**SPILL PRECAUTIONS:** Wear appropriate personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation.

### **SECTION VII - HANDLING AND STORAGE**

**USUAL SHIPPING CONTAINERS:** Tightly closed bags, tote bags, drums.

**STORAGE/TRANSPORT TEMPERATURE:** Ambient.

**STORAGE/TRANSPORT PRESSURE:** Ambient.

**PRECAUTIONS:** Keep in cool, dry, well ventilated area.

### **SECTION VIII - EXPOSURE CONTROLS / PERSONAL PROTECTION**

**ENGINEERING CONTROLS:** Local or general exhaust is recommended.

**PERSONAL PROTECTIVE EQUIPMENT:**



## **SAFETY DATA SHEET**

May be used to comply with OSHA's Hazard Communication Standard, 29CFR 1910.1200. Standard must be consulted for specific regulations.

## **JARACE SA-N**

Quick Identifier

Common Name (Used on Label and List)

EYES: Safety glasses or goggles.

SKIN: Protective gloves and body covering clothing.

RERSPIRATORY PROTECTION: If dusting occurs, use NIOSH approved respirator suitable for the environment.

### **EXPOSURE GUIDELINES:**

OSHA PEL: Not established.

ACGIH TLV: N/A

### **CARCINOGENICITY:**

IARC - Not carcinogenic.

ACGIH - Not carcinogenic.

NTP - Not carcinogenic.

OSHA - Not carcinogenic.

## **SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES**

APPEARANCE: Fine white crystals.

ODOR: Odorless to slightly acetic.

PHYSICAL STATE: Solid.

VAPOR PRESSURE (mm Hg): N/A

VAPOR DENSITY (AIR=1): N/A

VISCOSITY: N/A

BOILING POINT: N/A

MELTING POINT: 324 °C (615.2 °F)

POUR POINT: N/A

SPECIFIC GRAVITY (H<sub>2</sub>O=1): 1.528 g/cm<sup>3</sup>

SOLUBILITY IN WATER: Soluble. (34% or 246 g/L @ 20 °C)

### **ORGANIC VOLATILE IMPURITIES:**

FLAMMABILITY, FLASH POINT, LFL/UFL, AUTO IGNITION TEMP: See Section V

DECOMPOSITION TEMP: See Section X

## **SECTION X - STABILITY AND REACTIVITY**

CONDITIONS TO AVOID: Excess heat, incompatible materials, moisture.

INCOMPATIBILITY WITH OTHER MATERIALS: Nitric acid, fluoride, potassium nitrate, strong oxidizers, oxidizing agents, and other acids.

HAZARDOUS DECOMPOSITION: Carbon oxides, sodium oxides.

HAZARDOUS POLYMERIZATION: Will not occur.

## **SECTION XI - TOXICOLOGICAL INFORMATION**

EYES: Rabbit: Mild eye irritation.

SKIN: LD<sub>50</sub> Skin (Rat): >10,000 mg/kg  
Rabbit: Mild skin irritation.

INHALATION: LC<sub>50</sub> Dust Inhalation (Rat): >30,000 mg/m<sup>3</sup>

## **SAFETY DATA SHEET**

May be used to comply with OSHA's Hazard Communication Standard, 29CFR 1910.1200. Standard must be consulted for specific regulations.

## **JARACE SA-N**

Quick Identifier

Common Name (Used on Label and List)

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INGESTION: LD50 Oral (Rat): 3,530 mg/kg

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### **SECTION XII - ECOLOGICAL INFORMATION**

#### **ECOTOXICOLOGICAL INFORMATION:**

Toxicity to marine life:

LC50 (24 hr) - *Lepomis macrochirus*: 5,000 mg/L

EC50 (18 hr) - *Pseudomonas putida*: 7,200 mg/L

EC50 (48 hr) - Water flea: 5,800 mg/L

LC50 (120 hr) - *Pimephales promelas*: 13,330 mg/L

#### **CHEMICAL FATE INFORMATION:**

99% readily biodegradable.

---

### **SECTION XIII - DISPOSAL CONSIDERATIONS**

SPECIAL INSTRUCTIONS: Disposed of container and contents in accordance with all federal, state and local requirements. Offer surplus and non-recyclable solutions to a licensed disposal company.

---

### **SECTION XIV - TRANSPORT INFORMATION**

DOT DESCRIPTION:	Not regulated.	Class	Packing Group
PROPER SHIPPING NAME:			
ICAO/IATA DESCRIPTION:	Not regulated.	Class	Packing Group
IMDG DESCRIPTION:	Not regulated.	Class	Packing Group
	EMS No.:		

---

### **SECTION XV - REGULATORY INFORMATION**

#### **US FEDERAL REGULATIONS**

OSHA HAZARD COMMUNICATION STANDARD CLASSIFICATION: No known OSHA hazards.

TSCA INVENTORY LISTING: This material is listed on the TSCA inventory.

COMPONENT: Sodium Acetate.

CAS#: 127-09-3

SARA 302 Status: No chemicals subject to SARA 302 report.

SARA 311/312 CLASSIFICATION: No SARA hazards.

SARA 313 CHEMICALS: No chemicals subject to SARA 313 report.

CERCLA HAZARDOUS SUBSTANCE: Not regulated.

#### **WHMIS CLASSIFICATION:**

Not controlled under WHMIS (Canada).

EUROPEAN EINECS LISTING: ☒

CANADIAN (DSL) LISTING: ☒ CANADIAN (NDSL) LISTING: ☐

CHINA INVENTORY LISTING: ☒ TAIWAN LISTING: ☒



## **SAFETY DATA SHEET**

May be used to comply with OSHA's Hazard Communication Standard, 29CFR 1910.1200. Standard must be consulted for specific regulations.

## **JARACE SA-N**

Quick Identifier

Common Name (Used on Label and List)

**JAPANESE (MITI) LISTING:** ☒

**KOREAN INVENTORY LISTING:** ☒

**AUSTRALIAN (AICS) LISTING:** ☒

**NEW ZEALAND LISTING:** ☒

**PHILIPPINES (PICCS) LISTING:** ☒

**CALIFORNIA PROP. 65 LISTING:** ☐

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## **SECTION XVI - OTHER INFORMATION**

EXCEPT AS SPECIFICALLY SET FORTH IN THE TERMS AND CONDITIONS AVAILABLE AS SET FORTH BELOW, JARCHEM INDUSTRIES MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE FOR THE CHEMICALS IT SELLS. Notwithstanding any different or additional terms that may be embodied in your forms, letters and papers, any order received by Jarchem Industries will be accepted only on the condition that you expressly assent to the terms and conditions attached to Jarchem Industries' Sales Order Acknowledgment or available online at [www.jarchem.com/terms\\_and\\_conditions.php](http://www.jarchem.com/terms_and_conditions.php)

The information contained herein is to our best knowledge true and accurate. Recommendations and suggestions are made without guarantee of favorable results since conditions of use are beyond our control. These data shall not be construed as a recommendation to use any product in conflict with existing patents covering any material or use.

# Safety Data Sheet

according to 29 CFR 1910.1200



## Lava Wash IBS conc

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### SECTION 1: Identification of the substance/preparation and company

#### 1.1 Product identifier

**Lava Wash IBS conc**

#### 1.2 Relevant Identified uses of the substance or mixture and uses advised against

Use pattern :  
Textile auxiliary

#### 1.3 Details of the supplier of the safety data sheet

Dystar L.P.  
Pine Brook III

9844 Southern Pine Blvd  
Charlotte, NC 28273, USA  
Telephone no. (800) 439-7827  
Telefax no. (704) 561-3098

#### 1.4 Emergency telephone number

Emergency telephone number: (800) 424-9300

---

### SECTION 2: Hazard(s) Identification

#### 2.1 Classification of the Substance or Mixture

##### Classification of the chemical in accordance with paragraph (d) of §1910.1200

Harmful if swallowed.  
Causes skin irritation.  
Causes serious eye damage.

# Safety Data Sheet

according to 29 CFR 1910.1200



## Lava Wash IBS conc

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---

### Classification of the Substance or Mixture

Acute Toxicity: Cat. 4 (oral)

Skin corrosion/irritation: Irritant, Cat. 2

Serious eye damage/eye irritation: Irreversible effects on the eye, Cat. 1

### 2.2 Label elements

#### Pictograms:



corrosion



exclamation mark

#### Signal word:

Danger

#### Hazard Statements:

H302 Harmful if swallowed.

H315 Causes skin irritation.

H318 Causes serious eye damage.

#### Precautionary Statements (Prevention):

P280 Wear protective gloves/protective clothing/eye protection/face protection.

#### Precautionary Statements (Response):

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P301+P330+P331 IF SWALLOWED: Rinse mouth. DO NOT induce vomiting.

P310 Immediately call a POISON CENTER or a doctor/physician.

P302+P352 IF ON SKIN: Wash with plenty of soap and water.

P332+P313 If skin irritation occurs: Get medical advice/attention.



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### Precautionary Statements (Storage):

P404 Store in a closed container.

### Precautionary Statements (Disposal):

P501 Dispose of contents/container to waste treatment in accordance with national regulations.

### 2.3 Other hazards

If applicable in this section are given hazards which are not part of the overall classification but can contribute to the hazards which may be associated with the substance or mixture.

Overexposure to mist or vapor generated during processing may cause respiratory irritation.

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Not applicable

### 3.2 Mixtures

#### Chemical characterization

mixture of nonionic and anionic surfactants

#### Hazardous Ingredients (GHS) according to 29 CFR 1910.1200

Decyl alcohol, ethoxylated, phosphated, potassium salt

Content:	40 - 50 %	Eye Irrit. 2	H319
CAS number :	68071-17-0	Skin Irrit. 2	H315

alkyl ethoxylates

Content:	40 - 50 %	Acute Tox. 4 (oral)	H302
CAS number :	61827-42-7	Eye Dam. 1	H318

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

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General information: Take off immediately all contaminated clothing.

After inhalation: Upon inhalation of aerosol/vapour/dust: Take the patient into the fresh air; if there is difficulty in breathing, medical advice is required.

After contact with skin: Remove all contaminated clothing immediately. Cleansing with plenty of water, soap or other non-irritating cleansing agents. If skin reactions occur, contact a physician.

After contact with eyes: Contamination of the eyes must be treated by thorough irrigation with water, with the eyelids held open. A doctor (or eye specialist) should be consulted immediately.

After ingestion: Rinse mouth out immediately. In case of swallowing drink plenty of water. Do not induce vomiting. If the patient feels unwell, seek medical advice.

### 4.2 Most important symptoms and effects, both acute and delayed

Please see hazard statements in section 2.2 if given and information in this section if stated.

### 4.3 Indication of any immediate medical attention and special treatment needed

Please see precautionary statements in section 2.2 as well as first aid information in this section if stated.

---

## SECTION 5: Fire-fighting measures

### 5.1 Extinguishing media

Suitable extinguishing media: Water spray, CO2, foam, dry powder.

Extinguishing media that must not be used for safety reasons: not determined

### 5.2 Special hazards arising from the substance or mixture

not determined

### 5.3 Advice for firefighters

Special protective equipment for firefighting: Firemen have to wear self-contained breathing apparatus.

Further information: Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations.

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## SECTION 6: Accidental release measures

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### 6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions: Use the necessary personal protection equipment during any work.

### 6.2 Environmental precautions

Environmental precautions: Do not empty into drains or waters.

### 6.3 Methods and material for containment and cleaning up

Methods for cleaning up/taking up: Take up with absorbent material and fill into a closable container.

### 6.4 Reference to other sections

Additional information: For further disposal measures see chapter 13.

---

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Advice on safe handling: Close container immediately after use, avoid excessive heat.  
Do not allow to dry out.

Advice on protection against fire and explosion: No special measures against fire or explosion required.

### 7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels: Store sealed in original container in a cool place.

Storage stability: not determined

### 7.3 Specific end use(s)

not determined

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## SECTION 8: Exposure controls/personal protection

### 8.1 Exposure limits

Ingredients with occupational exposure limits to be monitored

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### 8.2 Exposure controls

General protective measures: Do not breathe vapour/spray. Avoid contact with eyes and skin. Take off immediately all contaminated clothing.

Hygiene measures: Keep away from food and drink stuffs.

Do not eat, drink or smoke at work.

Wash hands before breaks and at end of work and use skin-protecting ointment.

Respiratory protection : If airborne concentrations pose a health hazard, become irritating, or exceed recommended limits, use a NIOSH approved respirator in accordance with OSHA respiratory protection requirements under 29 CFR 1910.134.

Hand protection : Wear suitable gloves e.g. of PVC or nitrile rubber. In the event of contamination, change protective gloves immediately. Avoid skin contact with the wetted surfaces of the protective gloves.

Eye protection : safety glasses with side protection shield

Body protection : Wear protective clothing.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Form :	liquid
Colour :	colourless
Odour :	mild
Melting point	not determined
Boiling point :	approx. 100 °C
Flash point :	> 100 °C

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Ignition temperature :	not determined
flammability :	not determined
Lower explosion limit :	not determined
Upper explosion limit :	not determined
Vapour pressure :	not determined
Density :	approx. 1.05 g/cm <sup>3</sup>
Solubility in water :	miscible
pH value :	5.5 - 7.5 (10 g/l)
Octanol/water partition coefficient (log Pow) :	not determined
Viscosity (dynamic) :	not determined
Viscosity (kinematic) :	not determined
Viscosity (flow time) :	not determined

### 9.2 Other information

Combustion number :	not determined
Dust explosion class :	not determined
Bulk density :	not determined
Further information (phys.-chem.)	not necessary

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

No hazardous reactions when stored and handled according to prescribed instructions.

### 10.2 Chemical stability



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Thermal decomposition

No thermal decomposition when stored and handled correctly.

### 10.3 Possibility of hazardous reactions

Hazardous reactions: No hazardous reaction when used as directed.

Hazardous decomposition products: Not applicable

### 10.4 Conditions to avoid

For avoidable conditions: not necessary

### 10.5 Incompatible materials

For avoidable materials: not necessary

### 10.6 Hazardous decomposition products

Not applicable

---

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

Acute oral toxicity : LD50 > 2,000 mg/kg (rat)

Acute inhalation toxicity : not determined

Acute dermal toxicity : not determined

Irritant effect on skin : irritant (rabbit)

Irritant effect on eyes : irritant - risk of serious damage to eyes (rabbit eye)

Sensitization : not determined

Repeated dose toxicity : not determined

Mutagenicity: not determined

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Teratogenicity : not necessary

Carcinogenicity : not necessary

### 11.2 Information on toxicological effects

Primary route of exposure

Inhalation: Yes

Skin Absorption: No

Ingestion: Yes

Skin Contact: Yes

Eye Contact: Yes

### 11.3 Carcinogen status

IARC: No

NTP: No

OSHA: No

ACGIH: No

CalProp65: No

## SECTION 12: Ecological information

### 12.1 Toxicity

Fish toxicity : not determined

Daphnia toxicity : not determined

Algae toxicity : not determined

Bacteria toxicity : not determined

### 12.2 Persistence and degradability

Physico-chemical eliminability : not determined

Biodegradability : not determined

Behaviour in environmental compartments: not determined

Dissolved Organic carbon (DOC) : not determined

Chemical oxygen demand (COD) : 1,600,000 mg/l

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Biochemical oxygen demand (BOD5): 63,500 mg/l

Remarks: Product does not add to the AOX-value of the sewage. (DIN EN 1485)  
The product does not contain heavy metals in concentrations of concern for waste water.

### 12.3 Bioaccumulative potential

not determined

### 12.4 Mobility in soil

not determined

### 12.5 Results of PBT and vPvB assessment

not determined

### 12.6 Other adverse effects

not determined

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## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

Product: If utilization or recycling of the product is not possible, it should be disposed of according to the local regulations and laws, e. g. by incineration in a suitable plant.

Uncleaned packaging: Soiled, empty containers are to be treated in the same way as the contents.

---

## SECTION 14: Transport information

### 14.1 Transport classification

#### D.O.T. Information

CFR	Non dangerous goods
IMDG	Non dangerous goods
IATA_C	Non dangerous goods
IATA_P	Non dangerous goods

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### 14.2 Special precautions for user

### 14.3 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

No transport in bulk according to Annex II of MARPOL 73/78 and the IBC code foreseen for this substance or mixture.:

## SECTION 15: Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

#### US Regulations

##### TSCA

The components of this product are listed on the TSCA inventory.

##### Sara 313

This product is not subject to SARA Title III Section 313 reporting requirements under 40 CFR 372..

##### Sara 312

Immediate (acute) health hazard	Yes
Delayed (chronic) health hazard	No
Fire hazard	No
Sudden Release of Pressure	No
Reactivity	No

**HMIS code:** 2 - 1 - 0 - B

### 15.2 Chemical safety assessment

not determined

## SECTION 16: Other information

This data sheet has to be accessible to the technical staff all the time.

Text of all shortcuts referred to in sections 2 and 3:

H302 Harmful if swallowed.

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H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
Acute Tox. 4 (oral)	Acute Toxicity: Cat. 4 (oral)
Eye Dam. 1	Serious eye damage/eye irritation: Irreversible effects on the eye, Cat. 1
Eye Irrit. 2	Serious eye damage/eye irritation: Irritating to eyes, Cat. 2
Skin Irrit. 2	Skin corrosion/irritation: Irritant, Cat. 2

---

This information is based on our present state of knowledge. It should not therefore be construed as guaranteeing specific properties of the products described or their suitability for a particular application.

**Print date**



# Safety Data Sheet

PRODUCT NAME:ANTIFOAM 30L

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## SECTION 1. CHEMICAL PRODUCT/COMPANY IDENTIFICATION

**Product Name:**

ANTIFOAM 30L

**Chemical Name:**

SILICONE EMULSION

**CAS#:**

CHEMICAL BLEND

**Recommended Use:**

SILICONE BASED DEFOAMER

**Manufacturer's/Supplier's Identification:**

Manufacturers Chemicals

4325 Old Tasso Rd

Cleveland, TN 37312

Emergency Phone Number: CHEMTREC 800-424-9300

## Section 2. Hazards Identification

**Classification:**

Eye Irritation-Category 2B

**Signal Word:**

WARNING!

**Symbol:**

None Required

**Hazard Statements:**

Health

Harmful if inhaled.

**Precautionary Statements:**

Prevention

Wash hands thoroughly after handling.

Response

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing. If eye irritation persists: Get medical advice/attention.

## SECTION 3. Composition/Information On Hazardous Ingredients

Component Name

CAS Number

% by Weight

NO HAZARDOUS COMPONENTS

None

None

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## Section 4. First Aid Measures

### **Eyes:**

IMMEDIATELY FLUSH EYES WITH CLEAN WATER FOR AT LEAST 15 MINUTES. IF IRRITATION IS SEVERE OR CONTINUES AFTER RINSING, GET MEDICAL ATTENTION.

### **Skin:**

IF SKIN IRRITATION IS SEVERE OR CONTINUES, GET MEDICAL ATTENTION. REMOVE CONTAMINATED CLOTHING AND WASH AFFECTED SKIN AREAS WITH MILD SOAP AND WATER. WASH CONTAMINATED CLOTHING BEFORE RE-WEARING. DISCARD CONTAMINATED SHOES.

### **Inhalation:**

IF AFFECTED BY BREATHING VAPOR, REMOVE INDIVIDUAL TO FRESH AIR.

### **Ingestion:**

IF SWALLOWED CONTACT PHYSICIAN OR POISON CONTROL CENTER. NEVER GIVE ANYTHING BY MOUTH IF VICTIM IS UNCONSCIOUS. INDUCE VOMITING ONLY ON ADVICE OF PHYSICIAN.

## Section 5. Fire Fighting Measures

### **Suitable Extinguishing Media:**

WATER SPRAY OR MIST, CO<sub>2</sub>, DRY CHEMICAL, FOAM.

### **Fire Fighting Procedures:**

NO SPECIAL PROCEDURES NEEDED.

### **Precautions for Fire Fighting:**

WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE GEAR.

### **Hazardous Combustion Products:**

CARBON DIOXIDE, CARBON MONOXIDE, AND VARIOUS HYDROCARBONS MAY BE RELEASED DURING A FIRE.

## Section 6. Accidental Release Measure

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## **Personal Precautions/ Protective Equipment:**

REMOVE ALL UNNECESSARY PERSONNEL.FOR PERSONAL PROTECTIVE EQUIPMENT SEE SECTION 8.

## **Environmental Precautions:**

KEEP RUN OFF OUT OF MUNICIPAL SEWERS AND OPEN BODIES OF WATER.

## **Methods for Cleaning Up:**

CONTAIN SPILL AND SALVAGE AS MUCH MATERIAL AS POSSIBLE BY PUMPING TO A SALVAGE TANK OR DRUM.PICK UP REMAINING MATERIAL WITH A SUITABLE ABSORBENT.

---

## **Section 7. Handling and Storage**

### **Precautions for Safe Handling:**

WASH CONTAMINATED CLOTHING BEFORE RE-WEARING.AVOID CONTACT WITH EYES, SKIN AND CLOTHING.PRODUCT WILL CAUSE FLOORS TO BECOME VERY SLIPPERY WHEN IT IS SPILLED ON THEM.

### **Conditions for Safe Storage:**

STORE AT NORMAL TEMPERATURES AND CONDITIONS OF WAREHOUSING.

### **Incompatibilities:**

STRONG OXIDIZERS.



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## Section 8. Exposure Controls and Personal Protection

### Exposure Limits

<u>Chemical Name</u>	<u>CAS #</u>	<u>Exposure Limit/Value</u>	<u>Type</u>	<u>Source</u>
NO HAZARDOUS COMPONENTS	None	None	None	None

### Appropriate Engineering Controls:

SAFETY SHOWER/EYE BATH.

### Personal Protective Equipment

#### Eyes:

CHEMICAL SPLASH GOGGLES.

#### Skin:

NOT NORMALLY REQUIRED.

#### Respiratory:

NOT NORMALLY REQUIRED.